

TOWNSHIP OF MONTGOMERY

MUNICIPAL STORMWATER MANAGEMENT PLAN



PREPARED FOR:

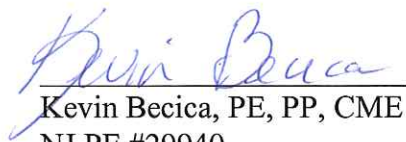
TOWNSHIP OF MONTGOMERY
2261 Route 206
Belle Mead, New Jersey 08502

NJPES #NJG 0148261
PI ID # 208131
Somerset County

DRAFT: JUNE 24, 2005

FINAL: AUGUST 10, 2005

REVISED:


Kevin Becica, PE, PP, CME
NJ PE #29940



ENVIRONMENTAL RESOLUTIONS, INC.

ENGINEERS, SCIENTISTS & PLANNERS

525 Fellowship Road, Suite 300, Mount Laurel, New Jersey 08054-3415
TEL 856-235-7170 FAX 856-273-923 mail@erinj.co

TABLE OF CONTENTS

<u>INDEX</u>	<u>PAGE</u>
1.0 Regulations Impacting Montgomery Township	1
2.0 Overview of the Montgomery Stormwater Management Plan	5
3.0 Goals	8
4.0 Stormwater Discussion	9
5.0 Montgomery Township	11
5.1 Population and Land Use	12
5.2 Description of Watershed	14
5.3 Stream Conditions	18
6.0 Design and Performance Standards	21
7.0 Evaluation of Master Plan	23
8.0 Land Use/Build-Out Analysis	23
9.0 Mitigation Plan	23
9.1 Overview of Mitigation	23
9.2 Specific Mitigation Projects by HUC	27
9.3 General Types of Mitigation Projects	30
10.0 Summary	35

APPENDIXES

Map 1. Existing Land Use/ Land Cover

Map 2. Existing Conditions

Map 3. Zoning Districts

Map 4. Wetlands and Open Waters

Map 5. AMNET Stream Biological Monitoring Stations

Map 6. Watershed Management Areas and Water Regions

Map 7. HUC-14 (Subwatersheds) and USGS Quadrangles

Map 8. FEMA Flood Zones

Map 9. NRCS SSURGO Soil Types

Map 10. Soil Erodible Land Class

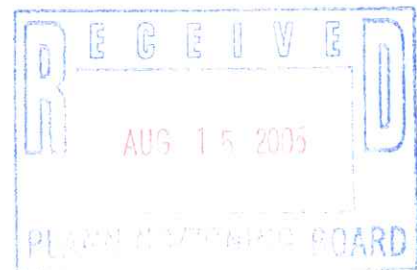
Map 11. Groundwater Recharge and Wellhead Protection Areas

Map 12. Stream Corridors

ATTACHMENT 1. Township of Montgomery, Sample Stormwater Ordinance

ATTACHMENT 2. NJAC 7:8 Subchapter 4 Municipal Stormwater Management Planning

ATTACHMENT 3. New Jersey's Integrated List of Waterbodies, Sublist 1-5, Millstone Watershed Management Area



LIST OF ACRONYMS USED IN THIS REPORT

AMNET	NJDEP's Ambient Biomonitoring Network
BAT	Biological Action Team
BMP	Best Management Practice
CAT	Chemical Action Team
CWA	Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972)
D.O.	Dissolved Oxygen
EDPA	Effective Date of Permit Authorization
EPA	Environmental Protection Agency
GIS	Geographic Information System
HUC	Hydrologic Unit Code
MS4	Municipal Separate Storm Sewer System
NJDEP	New Jersey Department of Environmental Protection
NJPDES	New Jersey Pollution Discharge Elimination System
NPDES	National Pollution Discharge Elimination System
NPS	Non-point Source
RFA	Request for Authorization
SWPPP	Storm Water Pollution Prevention Plan
SWQS	Surface Water Quality Standards
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USGS	United States Geologic Survey

1.0 Regulations Impacting Montgomery Township

In 1972, Congress amended the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) to prohibit the discharge of any pollutant to waters of the United States from a point source unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. This act established the goal of making our nation's waters suitable for the propagation of fish, aquatic and wildlife; recreational purposes; and the use of these waters for the public water supply, agricultural, industrial and other purposes. The act recognized the damaging effects that unmanaged stormwater can have on these national goals.

In 1987, Congress amended the Clean Water Act to require implementation, in two phases, of a comprehensive national program for addressing storm water discharges. The first phase of the program, commonly referred to as "Phase I" was promulgated on November 16, 1990 and required permits for stormwater discharges from priority sources including municipal separate storm sewer systems generally serving populations of 100,000 or more and several categories of industrial activity, including construction sites that disturbed five or more acres of land.

The second phase of the program, commonly referred to as "Phase II" was promulgated by the Federal government on December 8, 1999 and became effective on February 7, 2000. "Phase II" expanded the program to include discharges from smaller municipal separate storm sewer systems in urbanized areas and from construction sites that disturbed between one and five acres of land. The federal regulation required the implementation of six minimum measures and best management practices.

As a result of the U.S Environmental Protection Agency Phase II rules, the State of New Jersey Department of Environmental Protection developed the Municipal Stormwater Regulation program. The program addresses pollutants entering waters from storm drain systems owned or operated by local, county, state, interstate or federal agencies. The regulations refer to the storm drain systems as Municipal Separate Storm Sewer Systems (MS4s). New Jersey Pollutant Discharge Elimination System (NJPDDES) permits have been issued to municipalities throughout the state as well as to public complexes and highway agencies. The Municipal Stormwater Regulation Program is being implemented through four types of NJPDDES Permits, a Tier A Permit, a Tier B Permit, a Public Complex Permit and a Highway Permit.

Regulations Impacting Montgomery Township (Cont'd)

The Township of Montgomery contains a Municipal Separate Storm Sewer Systems known as an MS4 and is considered a Tier A municipality under the NJPDES system. The regulations for the NJPDES Tier A Permits were issued on February 2, 2004 and became effective March 3, 2004. The Township of Montgomery was required to submit a Request for Authorization, known as a RFA on March 31, 2004 and the permit authorizations was dated April 1, 2004. April 1, 2004 is known as the effective date of the permit authorization or the EDPA date.

Under Section F.3.b.ii of the Tier A NJPDES Permit, municipalities are required to adopt a municipal stormwater management plan in accordance with NJAC 7:8-4 within 12 months of the effective date of the permit authorization, or by April 1, 2005. The municipal stormwater management plan is an element of the Township Master Plan and must be presented at a public meeting that is advertised ten days prior to the meeting with the written stormwater management plan on file with the Township. This document satisfies these requirements.

Under Section E.2 of the Tier A NJPDES Permit, municipalities are required to prepare and implement a written stormwater pollution prevention plan within 12 months of the effective date of the permit authorization, or by April 1, 2005. The municipal stormwater pollution prevention plan is abbreviated as the SWPPP. The basic SWPPP consists of seventeen forms to be completed and implemented by the team members of the pollution prevention team. Maps of the municipality are required to plan the implementation of the pollution prevention plan. The pollution prevention plan completed by April 1, 2005 will be signed and certified and kept on file within the municipality for inspection by NJDEP. The pollution prevention plan forms, maps and lists will become a "living document" that will change through out the year and will track how the stormwater pollution prevention plan is being implemented by the municipality. Montgomery Township has completed the SWPPP and is implementing the plan.

Regulations Impacting Montgomery Township (Cont'd)

Under Section F.5 of the Tier A NJPDES Permit and as part of the municipal stormwater pollution prevention plan, the municipality must adopt improper disposal of waste ordinances to prevent pollution from entering the inlets and streams within the municipality by October 1, 2005. These ordinances include pet waste, litter control, improper disposal of waste, wildlife feeding, yard waste, and illicit connection ordinances. The pet waste ordinance was adopted April 7, 2005. The remaining ordinances are under review by the Township Attorney.

Under Section H.3.a of the Tier A NJPDES Permit, the Township of Montgomery is required to file an Annual Report and Certification to the New Jersey Department of Environmental Protection on or before May 2, 2005 and every 12 months thereafter. The Annual Report and Certification shall be maintained by the municipality for a period of five years. The Annual Report and Certification is the only document required to be sent to NJDEP. This 2005 Annual Report and Certification has been completed by Montgomery Township.

Under Section F.3.b.iii of the Tier A NJPDES Permit, municipalities are required to adopt ordinances to implement the municipal stormwater management plan 12 months after the adoption of the municipal stormwater plan. In effect, municipalities have 24 months from the effective date of the permit authorization, or by April 1, 2006 to adopt stormwater management ordinances that set forth exact stormwater management design standards for development and redevelopment. The draft stormwater management ordinances are located in the Appendix section of this plan.

The Sourland Mountain Regional Stormwater Management Plan which includes Montgomery Township is under development at this time. When the Sourland Mountain Regional Stormwater Management Plan is adopted, the municipal plan will be required to be revised to conform to the regional stormwater management plan.

The Montgomery Township municipal stormwater plan will be reviewed and approved by Somerset County and the New Jersey Department of Environmental Protection.

Subchapter 4 of NJAC 7:8 sets forth the specific requirements of a Municipal Stormwater Management Plan. The planning requirements of NJAC 7:8-4.2(c)8 and 9 require evaluation of the municipalities entire master plan, official map and development regulations, zoning ordinances, projected land use assuming full development, and future non-point source pollutant load assuming full build out. Subsections 8 and 9 are required for municipalities with more than one square mile of vacant or agricultural land and are not required to be completed until February 2, 2006.

Subchapter 5 of NJAC 7:8 sets forth the groundwater recharge, water quantity, and water quality standards for stormwater design. If any exceptions are required from the design and performance standards for development projects over one acre submitted to the Planning or Zoning Board, the stormwater management plan identifies mitigation options to offset the exceptions. Montgomery has unique characteristics and the mitigation plan provides the municipality with the power to correct and repair deficiencies that may be creating water quality impairments within each sub watershed.

To summarize, the Stormwater Management Plan is one of the many requirements that the Township of Montgomery must complete in order to fulfill the MS4 Permit and receive grant funds. The adoption of the stormwater management plan as part of the municipal master plan through a public hearing is required as part of the MS4 permit. The adoption of the stormwater management plan will be followed by the adoption of the stormwater management ordinances by April 1, 2006.

The timeline to complete the requirements of the Municipal Separate Storm Sewer (MS4) Permit is shown in graphical form on the following page. The requirements are listed in a tabular form on the Tier A Matrix on the next page. The Tier A matrix is prepared by NJDEP as part of the Municipal Stormwater Regulation Program.

NJPDES- MS4 Tier A Permit Timeline

[illegible]

NJPDES Municipal Stormwater Regulation Program Summary of Statewide Basic Requirements (SBRs)

Tier A Municipal Stormwater Permit (NJ0141852)
(Please refer to final permit for details on SBRs)

Statewide Basic Requirement	Minimum Standard	Implementation Schedule
Stormwater Pollution Prevention Plan (SPPP)	SPPP describes the municipality's stormwater program, which includes details on the implementation of required SBRs.	12 months from effective date of permit authorization (EDPA)
Public Notice	Comply with applicable State and local public notice requirements when providing for public participation.	Upon EDPA
Post-Construction Stormwater Management in New Development and Redevelopment		
Stormwater Management Plan	Adopt stormwater management (SWM) plan in accordance with N.J.A.C. 7:8-4.	Complete 12 mos. from EDPA
Stormwater Control Ordinance	Adopt and implement stormwater control ordinance in accordance with N.J.A.C. 7:8-4.	Adopt ordinance 12 months from SWM plan adoption.
Residential Site Improvement Standards	Ensure compliance with Residential Site Improvement Standards for stormwater management (N.J.A.C. 5:21-7), including any exception, waiver, or special area standard approved under N.J.A.C. 5:21-3.	Upon EDPA
BMP Operation and Maintenance	Ensure adequate long-term operation and maintenance of BMPs.	EDPA for BMPs on municipal property, 24 months for BMPs elsewhere.
Storm Drain Inlets Design Standard for New Construction	New storm drain inlets must meet the design standards specified in Attachment C of the permit.	12 months from EDPA if municipally installed. Otherwise 24 mos. from EDPA
Local Public Education		
Local Public Education Program	Copy and distribute educational brochure (provided by the Department) annually to residents and businesses, and conduct a yearly educational "event". Have brochure available at this event.	Start 12 months from EDPA
Storm Drain Labeling	Label all municipal storm drain inlets that are next to sidewalks, or within plazas, parking areas or maintenance yards. Coordinate efforts with watershed groups and volunteer organizations.	Within 60 months from EDPA
Improper Disposal of Waste		
Pet Waste Ordinance	Adopt and enforce an ordinance requiring owners and keepers to immediately and properly dispose of their pet's solid waste. Distribute information with pet licenses regarding the ordinance and the environmental benefits of proper disposal of pet waste.	Complete 18 mos. and ongoing
Litter Ordinance	Adopt and enforce a litter ordinance, or enforce the existing State litter statute (N.J.S.A. 13:1E-99.3).	Complete 18 mos. and ongoing
Improper Waste Disposal Ordinance	Adopt and enforce an ordinance prohibiting spilling, dumping or disposal of any materials other than stormwater into the MS4.	Complete 18 mos. from EDPA and ongoing

Wildlife Feeding Ordinance	Adopt and enforce an ordinance that prohibits feeding of non-confined wildlife in any public park or property owned/operated by the municipality (except environmental education centers).	Complete 18 months from EDPA and ongoing
Yard Waste	Adopt and enforce an ordinance that prohibits placing non-containerized yard waste in the street, OR collect yard waste monthly Oct.-Dec., once in spring, and "as needed" during remainder of year. Non-containerized yard waste cannot be placed any closer than 10' from a storm drain inlet.	Start 18 months from EDPA and ongoing
Illicit Connection Ordinance	Develop, implement and enforce a ordinance, to the extent allowable under State law, to prohibit illicit connections to the MS4.	Develop & implement 18 months from EDPA
Illicit Connection Elimination Program	Develop, implement and enforce a program to detect and eliminate illicit connections into the municipality's small MS4.	Develop & implement 18 months from EDPA
MS4 Outfall Pipe Mapping	Map all municipal storm sewer outfall pipes which discharge to surface water by dividing the municipality into two sectors for the purposes of outfall mapping.	Map 1 st sector 36 mos. from EDPA. Map 2 nd sector 60 mos. from EDPA
Solids and Floatable Controls		
Street Sweeping	In predominantly commercial areas, conduct monthly sweeping of curbed streets, roads and highways (with a speed limit ≤ 35 mph), weather and street surface conditions permitting.	Start 12 months from EDPA and ongoing
Storm Drain Inlet Retrofitting	Retrofitting of storm drain inlets during road repair, reconstruction, alterations or repaving with inlets that meet the design standards specified in Attachment C of the permit.	Start 12 months from EDPA and ongoing
Stormwater Facility Maintenance	Develop and implement a stormwater facility maintenance program that includes yearly catch basin cleaning and ensures proper function and operation of all municipally operated stormwater facilities.	Start 12 months from EDPA and ongoing
Road Erosion Control Maintenance	Develop a roadside erosion control maintenance program to identify and stabilize roadside erosion. Make repairs in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey (N.J.A.C. 2:90-1).	Start 18 months from EDPA and ongoing
Outfall Pipe Stream Scouring Remediation	Develop and implement a stormwater outfall pipe scouring detection, remediation and maintenance program to identify and stabilize localized stream and stream bank scouring in the vicinity of outfall pipes operated by the municipality. Repairs shall be in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey (N.J.A.C. 2:90-1).	Start 18 months from EDPA and ongoing
Maintenance Yard Operations		
De-icing Material Storage	Construct permanent indoor storage with an impermeable floor for deicing materials. Seasonal tarping shall be used as an interim BMP until the permanent structure is completed. Uncovered sand may be stored outside if a 50' setback is maintained from any storm sewer inlet.	Comply w/ tarping & sand storage requirements w/in 12 mos, complete perm. structure w/in 36 mos. from EDPA.
Fueling Operations	Develop and implement SOPs for vehicle fueling and bulk delivery and implement with the required practices contained in Attachment D of the permit.	Start 12 months from EDPA and ongoing
Vehicle Maintenance	Implement required practices for vehicle maintenance contained in Attachment D of the permit.	Start 12 mos. from EDPA & ongoing
Good Housekeeping	Implement required practices for good housekeeping, contained in Attachment D of the permit.	Start 12 mos. from EDPA & ongoing
Employee Training		
Employee Training	Develop and conduct an employee training program for appropriate employees that covers the required topics contained in the permit.	Start 12 mos. from EDPA & ongoing

2.0 Overview of the Montgomery Stormwater Management Plan

This Municipal Stormwater Management Plan documents the strategy for Montgomery Township to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains the elements as described in N.J.A.C. 7:8 Section 4.2 of the Stormwater Management Rules. Montgomery Township contains more than one square mile of open space and agricultural land based on the NJDEP geographical information system (GIS) data available. An Existing Land Use Land Cover based on the NJDEP 1995-1997 Land use/Land Cover GIS Data Set is provided in the Appendix, **Map 1, Existing Land use/ Land Cover**. As of 1995, approximately 28% or 9 square miles of the Township contains forested land cover and roughly 26% or 8 square miles of the Township contains agricultural uses. As described in schedule for adoption of the stormwater management plan and ordinances N.J.A.C. 7: 8 Section 4.3, the completed elements of N.J.A.C. 7:8-4.2 (c) 8 & 9 will be provided on or before February 2, 2006.

This Municipal Stormwater Management Plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development, defined as projects that disturb one or more acre of land. The definition of major development for the Stormwater Management Plan does not include the increase of impervious area by more than one quarter acre. The implementation of these standards into the Montgomery Township Master Plan is intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides baseflow in receiving water bodies. The plan stresses best management practices with long-term operation and maintenance measures for existing and future stormwater facilities that perform well in the soil and water table conditions within Montgomery Township and can be maintained by the Montgomery Township Public Works Department.

Residential projects presented to the Montgomery Township Planning and Zoning Boards must meet the Residential Site Improvement Standards for stormwater management design. The stormwater design and performance standards being implemented in this stormwater management plan are the same as the design and performance standards for stormwater management in the Residential Site Improvement Standards and as set forth under N.J.A.C. 7:8 Section 5.

Non-residential development projects are currently reviewed under Ordinance Section 16-5.2, Drainage. Detention and retention basins are required to hold storm water runoff such that discharges from the site will not exceed pre-development rates. The water quality design standards that are in place for non- residential projects require no more than ninety percent (90%) of the runoff from 1 ¼ inches of rain falling in two hours be drained from the basin prior to 36 hours. The current ordinance requires that a “minimum of eighty percent (80%) of the proposed land use total suspended solids loading” will be removed in accordance with the New Jersey Stormwater Best Management Practices manual. The current design requirement is that the nonpoint source pollutant loads after development will not increase over the predevelopment nonpoint source pollutant loads. The current ordinance requires nonstructural stormwater measures such as protection of riparian corridors, maintenance of the predevelopment time of concentration and protection of endangered habitats and species.



Cruser Brook at Pedestrian Bridge adjacent to Garrison Court

5/13/05

The adoption of the NJPDES stormwater management design ordinances for projects greater than one acre will require the stormwater management basin design to meet reductions in the discharges from the site runoff from pre-development rates for the 2, 10 and 100 year storms, to provide water quality designs based on eighty percent (80%) reduction of total suspended solids through the use of one or more best management practices, and to meet annual recharge requirements. The discharge reduction requirements are more stringent than the current Montgomery standards, the water quality requirements provide clarifications for the designer, and the recharge requirements were not previously required in Montgomery Township ordinances. Therefore, the implementation of this plan will have a substantial impact on the stormwater management design of commercial development projects.

Montgomery Township has implemented a riparian buffer ordinance to protect wetlands, slopes greater than fifteen percent (15%) and wooded areas adjacent to stream that are not protected by wetlands or wetland buffers. Protection of riparian buffers enhances water quality and stream health.

This plan contains a mitigation plan when an exemption of the design and performance standards is sought by a developer. As part of the mitigation section of the stormwater plan, specific and general stormwater management projects within Montgomery have been identified as alternative projects if a development cannot meet the stormwater standards. Exemptions are provided to ensure that commercial redevelopment of existing sites will continue to occur in Montgomery where the stormwater standards cannot be imposed.



Route 206 & 518 , Commercial site for future redevelopment

Exemptions are not to be granted for proposed non-residential development on vacant or undeveloped property.

3.0 Goals

The goals of the Montgomery Municipal Stormwater Management Plan are to:

- Reduce the impact of stormwater runoff for all stormwater events, especially high frequency events. High frequency events are storms that occur frequently with low rainfall amounts (also called the water quality storm);
- Improve baseflow to streams by maintaining groundwater recharge;
- Reduce silting of ponds and streams by providing total suspended solids reduction and reduction of soil erosion from any development or construction project;
- Improve in-stream and riparian habitat for all watershed residents (humans, wildlife, flora and fauna);
- Reduce flood damage, including damage to life and property;
- Prevent further degradation of existing stream features and structures;
- 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 best management practices.

To achieve these goals, a variety of strategies are proposed for implementation. Specific design and performance standards are included in the Montgomery Township Draft Stormwater Ordinance. Preventative and corrective maintenance is required to ensure the long term effectiveness and safety of stormwater management facilities. Under the review process, the Montgomery Township Planning and Zoning Boards will make sure that each facility has a detailed maintenance plan and meets all safety standards in accordance with the Montgomery Township Stormwater Ordinance.

4.0 Stormwater Discussion

Land development can dramatically alter the hydrologic cycle (See Figure 1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration.

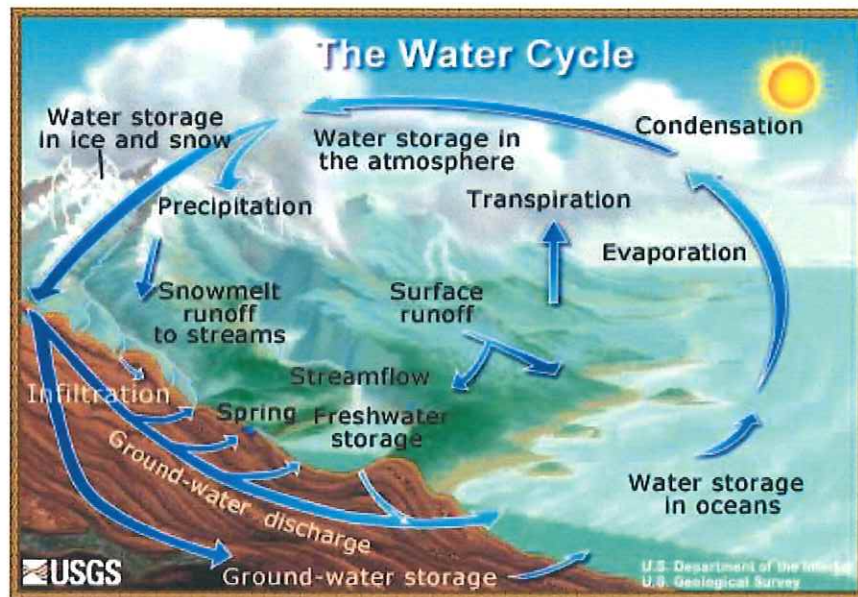


Illustration by John M. Evans, Colorado District, USGS

Figure 1. Hydrologic Cycle

Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Downstream erosion, sediment deposits can be seen in Photograph 1.



Photograph 1. Embankment Erosion on Rock Brook

Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can cause destruction of habitat, to which some species cannot adapt.

In addition to increases in runoff peaks, volumes, and loss of groundwater recharge, land development often results in the accumulation of pollutants on the land surface that runoff can mobilize and transport to streams. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended solids, hydrocarbons, pathogens, and nutrients.

Groundwater recharge and well head protection areas in Montgomery Township are shown in the Appendix, on **Map 11, Groundwater Recharge and Wellhead Protection Areas**. Soil types, which can be evaluated for the recharge capacity and depth to seasonal high water table, are shown in the Appendix, on **Map 10, NRCS SSURGO Soil Types**.

Land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and raise the temperature of the downstream waterway, adversely affecting the stream biology. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

5.0 Montgomery Township

The Township of Montgomery contains 32.61 square miles in the southern portion of Somerset County half way between New York City and Philadelphia. The Township is bordered by Hillsborough Township, Franklin Township, Borough of Rocky Hill, Princeton Township and Hopewell Township. The community has merged residential, commercial and agricultural uses while preserving open space, and historic districts, providing recreational facilities and providing excellent school facilities.



5.1 Population and Land Use

The population of Montgomery has increased from 9,612 in 1990 to 17,481 in the year 2000. This represents an eighty-two percent (82%) increase in the population over the ten year period. This growth rate was the highest rate of growth of any municipality in Somerset County during the decade. The Somerset County growth rate from 1990 to 2000 was 24%. The census data since 1970 is listed below:

Township	1970	1980	1990	2000
Montgomery	6,353	7,360	9,612	17,481

Montgomery Township is divided approximately in thirds among urban, forested and agricultural land uses. The existing land uses are shown in the Appendix, on **Map 1, Existing Land Use/Land Cover**. Urban land uses are the greatest land cover type, comprising approximately 31% of the land cover. Urban land uses are concentrated in clusters within the municipality with the greatest concentration in the northeast section of the Township adjacent to Franklin Township and Hillsborough Township. Higher density development has occurred in the southeast corner of Montgomery in the Apartment / Townhouse Residential Zone and in the Single Family Residential Clusters Zone. The existing zoning areas are shown in the Appendix, on **Map 2, Zoning Districts**.



Clinton Drive & Burton Circle

Forested land is the second most prevalent land cover over approximately 28% of the Township. Approximately half of Montgomery's forest areas are located in the northwestern third of the Township in the Sourland Mountain area. The remaining forest areas are scattered throughout the Township with most being at low elevations and adjacent to the stream corridors.



Bedens Brook at Cherry Hill Road

Agriculture utilizes approximately 26% of the remaining land cover within the municipality. Wetlands take up approximately thirteen percent (13%) of the land cover area and are found adjacent to the stream corridors. In the Sourland Mountains, the wetlands are wide and create large headwaters to the streams flowing off the mountain area.

The 3M manufacturing plant is located in the Special Industrial Zone in the Sourland Mountain area in Montgomery Township. The raw material is extracted in an open pit mine, crushed and then colored for the surface material used in the manufacture of asphalt shingles. The production of the final product creates a by-product of a very fine grey powder. The by-product appears to be very light and soluble in water allowing it to be transported by water for long distances. The manufacturing facility has constructed a significant network of rip rap swales and stormwater basins to control stormwater management within the manufacturing facility.

The change in the major land use cover types between 1972 and 1990 are shown below. Roughly 5,000 acres of agricultural land was developed into urban land uses in the 23 year period from 1972 to 1995.

Land Use	1972	1995	Change (1972-1995)	
	Acres	Acres	Acres	Percent
Agriculture	10,277	5,341	-4,935	-48%
Urban	1,410	6,357	4,946	350%
Forest	6,631	5,724	-907	-14%
Wetlands	2,376	2,694	317.2	13.2%

5.2 Description of Watershed

Montgomery Township is located on the western side of the Millstone River in the Raritan Basin. The streams and tributaries within the municipal boundaries of Montgomery Township flow into the Millstone River, which is designated as Watershed Management Area 10, part of the Raritan Basin. The Millstone Watershed Management Area 10 is shown in the Appendix on **Map 6, Watershed Management Areas and Water Regions**.

The streams and tributaries in Montgomery Township generally flow from west to east, with the exception of Pike Brook which flows north to south and Cherry Brook, which flows south to north. Both Pike Brook and Cherry Brook flow into Bedens Brook along the southern side of the municipality. The streams can be clearly seen in the Appendix on **Map 12, Stream Corridors**.

Smaller subwatersheds within the major watershed are delineated by a fourteen digit hydrologic unit code, abbreviated HUC code. The nine subwatersheds within Montgomery Township are listed below and are shown in the Appendix on **Map 7, HUC 14 (Subwatersheds) and USGS Quadrangles.**

Nine Subwatersheds in Montgomery Township

- Bedens Brook (above Province Line Road), HUC 02030105110040
- Bedens Brook (below Province Line Road), HUC 02030105110050
- Cruiser Brook/Roaring Brook, HUC 02030105110090
- Millstone River (Bedens Brook to Heathcote Brook), HUC 02030105110030
- Millstone River (Balckwells Mills to Bedens Brook), HUC 02030105110110
- Pike Run (above Cruiser Brook), HUC 02030105110080
- Pike Run (below Cruiser Brook), HUC 02030105110100
- Rock Brook (above Camp Meeting Avenue), HUC 02030105110060
- Rock Brook (below Camp Meeting Avenue), HUC 02030105110070

In November 2002 and January 2003, the NJDEP proposed significant amendments to the State Water Quality Standards (SWQS) to upgrade the classification of streams to Category One Waters to provide stricter development standards to these waterways. Category One waters may include waters that originate from parks, freshwater trout production waters and their tributaries and shellfish waters of exceptional value. The Category One designation applies a 300 foot buffer along the stream corridor and stricter development standards. Within Montgomery Township Rock Brook, Roaring Brook, Cruiser Brook, and the headwaters of Beden Brook have been nominated for the Category One designation. None of the streams within Montgomery Township are currently designated as Category One.

Sylvan Lake, located on the North Princeton Developmental Center is one of the ponds in Montgomery Township. The pond is part of the Rock Brook stream corridor and was created by a dam structure at the developmental center.



Sylvan Lake, North Princeton Developmental Center, 5/13/05

Currently there are nineteen contaminated sites within the Township as identified in the Known Contaminated Sites in New Jersey report last updated in 2001. It is important to take note of these sites and the status of remedial action, if any, as they will impact the selection of best management practices for stormwater management in immediately adjacent sites.



Superfund site off Route 206

There are two public community water supply wells located in Montgomery Township owned by the Elizabethtown Water Company. These public water supply sources need to be protected against recharge of contaminated water. The well head protection areas are shown in the Appendix, **Map 11, Groundwater Recharge and Wellhead Protection Areas**.

The watershed conditions within Montgomery Township are influenced by the underlying geology. The bedrock geology of Montgomery consists of sedimentary rocks of Lockatong, Stockton and Passaic formations and intrusive rocks of the Jurassic Diabase. The Sourland Mountain along the northwest side of the municipality consists of Lockatong, Jurassic Diabase and Stockton formations. The majority of Montgomery Township has underlying shales of Passaic and Passaic Gray formations.



Exposed Sediment Rock in Montgomery Township

The watershed characteristics can be evaluated by examining the erosivity of the soils in relationship to the areas of steep slopes. A map showing the critical slopes in purple and the highly erosive soils in red is shown in the Appendix on **Map 10, Soil Erodible Land Class**.

Montgomery Township has flat to gently rolling hills in the lower elevations and mountains at the higher elevations in the Sourland Mountain. Steep slopes occur in the transitional areas between the high and low areas. The most extensive areas of steep slope occur along Rock Brook near Hollow Road and from Back Brook to the northern township border with Hillsborough. The slopes in both areas are greater than 25%. The steep slope areas need additional protection by steep slope design standards but also may have the most erosion if the soils are erosive in the steep slope areas.

One soil characteristic that influences development is the depth to seasonal high water table. The majority of the soils (56%) in Montgomery Township have a depth to seasonal high water table at or greater than 6 feet. A small percentage (4%) of the soils has a moderate depth to seasonal high water table of four feet. The remaining areas (42%) have less than three feet to the seasonal high water table. These are located adjacent to stream corridors, in the southern portion of the municipality or adjacent to the stream corridors. The stream corridors, flood plains and flood zones are shown in the Appendix on **Map 8, FEMA Flood Zones**.

5.3 Stream Conditions

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of measurements related to the dynamic health of the macroinvertebrate community. The AMNET sites within Montgomery Township are shown in the Appendix on **Map 5, AMNET and Stream Quality Monitoring Stations**.

The New Jersey Integrated Water Quality Monitoring and Assessment Report, 305(b) and 303(d) is required by the Federal Clean Water Act. The report identifies by watershed area waters that do not meet surface water quality standards and are impaired. The total maximum daily load, abbreviated TMDL, is the amount of a pollutant that can be accepted by a water body without exceeding water quality standards or interfering with the ability to use a water body for one or more of its designated uses. The Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDL's are needed. Bedens Brook, Pike Run, Rock Brook and the Millstone River are listed on the 2004 Sublist 5 contained in Attachment 3. .

There are six AMNET Biological Monitoring Stations within Montgomery Township that are being monitored. The data for each AMNET site in Montgomery is listed below:

Site	Stream	1992 Rating (Score)	1998 Rating (Score)
AN0399	Rock Brook	Moderate (12)	Moderate (18)
AN0400	Rock Brook	Moderate (21)	No Sample
AN0401	Bedens Brook	Moderate (12)	Moderate (15)
AN0403	Cruser Brook	None (27)	Moderate (21)
AN0404	Back Brook	None (24)	Moderate (21)
AN0405	Pike Run	Moderate (15)	Severe (3)

Source: NJDEP AMNET data

The data indicates that the water quality has decreased in all of the streams sampled except Rock Brook. This would correlate to the land use data indicting the transformation of agricultural land to urban land and the decrease of overall open space. In general, a stream is not impaired if the overall impervious cover is less than ten percent, a stream will become moderately impaired when the overall impervious cover is between ten and thirty percent and a stream will become severely impaired when the impervious cover is greater than thirty percent.

TMDL reports are issued by NJDEP documenting the total maximum daily loads for all streams and conditions on the Sublist 5 of the Integrated List. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and nonpoint source, which includes stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation strategies may include improved stormwater treatment plants, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other best management practices or BMPs.

A review of the U.S Environmental Protection Agency (EPA) on line database for Total Maximum Daily Loads has been used find the current status of impaired waters within Montgomery Township. Under the 2002 cycle, Beden Brook is listed as impaired for fecal coliform, total phosphorus, arsenic with the aquatic life being moderately impaired. Under the 2002 cycle, Pike Run and Rock Brook are listed as moderately impaired for aquatic life.

The Total Maximum Daily Loads for Fecal Coliform to Address 48 Streams in the Raritan Water Region was proposed by NJDEP on April 21, 2003, established June 2003 and adopted in September of 2003. In this TMDL Report, the following stream segments within Montgomery Township are listed for fecal coliform:

Stream Segment	Description
1401600, 1401700	Impaired watersheds include portions of Beden Brook and Pike Run. The impaired watershed associated with Beden Brook begins at the confluence of Rock Brook and Beden Brook and extends downstream to the confluence of Beden Brook and Pike Run. The impaired watershed associated with Pike Run begins at the confluence of Pike Run and Cruser Brook and extends downstream to the confluence of Pike Run and Rock Brook.
1402000, 1402540	Portions of the Millstone River watershed. Impaired watershed associated with these segments begins at the confluence of Beden Brook and Millstone River and continues north to its confluence with the Raritan River. Excludes subwaterways associated with Royce Brook and Six Mile Run.

The TMDL report identifies the percent reduction necessary for each stream segment to meet the fecal coliform state water quality standards. Bedens Brook and Pike Run both have a required 97% reduction.

The Total Maximum Daily Loads for Fecal Coliform to Address 4 Streams in the Raritan Water Region was proposed by NJDEP on May 2, 2005. The TMDL report has not been established or approved. In the proposed TMDL report, the following stream segment is proposed:

Stream Segment	Description
1401560	Impaired watershed includes begins at the confluence of Rock Brook and Beden Brook and continues west and north to the origination of Rock Brook

The TMDL report identifies a 46% percent reduction necessary for Rock Brook to meet the fecal coliform state water quality standards. The potential sources of contamination include wildlife (deer and geese), livestock, suburban stormwater, and residential sections on septic systems. The strategies to improve water quality include organizing local community based goose management programs, prioritizing federal funds for agricultural best management practices and implementation of the Phase II stormwater program.

6.0 Design and Performance Standards

Montgomery Township currently utilizes the Residential Site Improvement Standards for stormwater management design for all residential development before the Planning and Zoning Boards. The Residential Site Improvement Standards supersede all Township of Montgomery design standards and do not have to be adopted by the municipality.

Non-residential development projects are currently reviewed under the design standards of the Ordinance 16-5.2, Drainage. The design requirements are that post construction peak rates of runoff should not be greater than pre-construction peak rates of runoff. The adoption of the NJPDES stormwater management design ordinances will require the stormwater management basin design to meet stricter peak rate of reduction requirements, water quality requirements to reduce total suspended solids and recharge requirements. The predevelopment peak rate of runoff from a 2 year storm will be reduced by 50% after development; the peak rate of runoff from a 10 year storm will be reduced 75%; and the peak rate of runoff from a 100 year storm will be reduced 80%.

For non-residential projects, the annual rate of rainfall that was infiltrated into the ground before development will be required to be infiltrated or recharged after development. Eighty percent (80%) of the total suspended solids will have to be removed from the water before is it discharged to the stream or storm pipe system through the use of one or more approved Best Management Practices (BMP's).

For non-residential sites disturbing less than one acre stormwater management best management practices will be recommended where considered appropriate for the scale of the project. Single family residential applications will not have to meet the stormwater requirements unless the area of disturbance meets the definition of major development.

The Planning and Zoning Board will review development plans to meet the stormwater regulations of the Residential Site Improvement Standards for residential development and to meet all the Township standards for non-residential development. Under the Montgomery Engineering Department, Montgomery Township inspectors observe construction of all projects to ensure that the stormwater management measures are installed and constructed as shown on the approved plans.



Storm Inlet in Conformance with Attachment C of Stormwater Regulations

7.0 Evaluation of Master Plan

The evaluation of the Montgomery Township Master Plan (including the Land Use element), official map and development regulations (including the zoning ordinance) is element 8 of NJAC 7:8-4.2. As described in the schedule for adoption of municipal stormwater management plan and ordinances Section NJAC 7:8-4.3 the requirements of 4.2 (c) 8 and 9 are not operative until February 2, 2006. The completed element of N.J.A.C. 7:8-4.2 (c) 8 will be provided on or before February 2, 2006.

8.0 Land Use/Build-Out Analysis

The Land Use/Build-Out Analysis is element 9 of NJAC 7:8-4.2. As described in the schedule for adoption of municipal stormwater management plan and ordinances Section NJAC 7:8-4.3 the requirements of 4.2 (c) 8 and 9 are not operative until February 2, 2006. The completed element of N.J.A.C. 7:8-4.2 (c) 9 will be provided on or before February 2, 2006.

9.0 Mitigation Plans

9.1. Overview of Mitigation Process

This mitigation plan is provided for proposed projects greater than one acre in size to be developed on previously improved or developed lands that need an exemption from one or more of the stormwater management design and performance standards. Exemptions are provided to ensure that redevelopment of existing sites will continue within Montgomery where the current stormwater standards cannot be imposed. The mitigation projects will ensure that the design standards are met through another means within the same stream corridor or within the Township. Exemptions are not to be granted for new development projects built on previously undeveloped land or open space. Mitigation projects can fall into the following Options:

Option 1. Exemptions are to be granted only upon the condition that the applicant provides a mitigation project of equal or additional stormwater design benefit value within the same sub-watershed as delineated by the HUC 14 number. For example if the applicant cannot reduce the peak rate of runoff from the 2, 10 and 100 year storm event to meet the 50%, 75% and 80% requirement on the site, the mitigation project might be retrofitting an existing basin within the same watershed with an outlet control device to reduce the peak rates of runoff by the same cubic feet per second reductions. An example of this type of project would be the retrofitting of the outfall pipe from the residential basin at Colfax Road.



Outfall Structure at Basin at Colfax Road, large opening does not provide water quality

In Montgomery Township, another way to meet peak rate of reduction requirements would be the removal of sediment obstructions in the stream to reduce the peak rate of flow downstream that occurs due to the sediment deposit and resultant reduction in flow area that increases velocity. The applicant would be required to analyze the existing drainage shed to the basin, and determine the design solution that would restore the stream flow to natural conditions. The developer must ensure long term maintenance of the project, including maintenance requirements per the NJDEP Stormwater BMP Manual. An example of this condition at Camp Meeting Road and Rock Brook is shown, however, less severe conditions exist at other locations.



Bridge at Camp Meeting Avenue and Rock Brook,
Four foot available between bridge and sediment deposits

Under Option 1, the applicant may select a specific mitigation project listed in this plan or work with the Montgomery Township Engineering Department to determine a suitable mitigation project in the same drainage area (HUC 14) from the general types of mitigation projects listed in this plan. The review of stormwater management design for the site and stormwater criteria provided by the mitigation project will be reviewed and approved by the Planning or Zoning Board Engineer, whichever is applicable, under the review process.

Option 2. If a suitable site cannot be identified within the same drainage area (HUC 14) as the proposed development, as set forth in Option 1, the mitigation project may provide mitigation that does have the equivalent stormwater design benefit value, but addresses the same issue. (ie. water quality or recharge) For example, if the applicant cannot meet the 80% reduction of the Total Suspended Solids requirement at the site, the mitigation project might be to repair the bank conditions at Mill Pond, to reduce sediment deposit and improve water quality.

EXAMPLE OF OPTION 2



Bank Conditions (East Side) at Mill Pond, note bare embankment

In the case of Option 2, the applicant will be required to determine the cost of meeting the design requirement on the development site and provide a stormwater design of equal or greater value at the mitigation site. The cost estimates for the stormwater development and mitigation will be reviewed and approved by the Planning or Zoning Board Engineer whichever is applicable, under the review process.

Option 3. The Planning or Zoning Board may allow the developer to provide funding for a specific project that has been identified in the Stormwater Management Plan if the value of meeting the on-site stormwater design is so low that it will not fund an entire project. The value of the funding must be equal or greater to the cost to implement the stormwater management design on site. The cost estimates for the stormwater development and mitigation will be reviewed and approved by the Planning or Zoning Board Engineer whichever is applicable, under the review process.

Option 3 should be used only on small redevelopment projects where all other options have been exhausted. The collection of funds should be used as a last resort.

9.2. Specific Mitigation Projects by HUC

1. HUC 020301051100100, Mill Pond (Dead Tree Run Road/Bridgepoint Road), Sylvan Lake (NPDC/Skillman Village), Opatut Tract pond (Cherry Hill Road)

- a. Shore line restoration
- b. Removal of lake vegetation



2. HUC 02030105110070, Existing Swale at intersection of Stouts Road and Hollow Road

- a. Swale Repair and/or Replacement with Storm Pipe. (Typical)



3. HUC 02030105110070, Rock Brook below Camp Meeting Ave.

Hollow Road and Camp Meeting Avenue

- a. Analyze Stream Condition
- b. Remove sediment in stream bed
- c. Repair embankments adjacent to Bessie Grove Memorial Park
- d. Repair embankments downstream of bridge



Bessie Grover Memorial Park downstream of Bridge at Camp Meeting and Rock Brook
Tree and Park Bench under scour conditions

4. HUC 02030105110060, Rock Brook north of Camp Meeting Ave.

Hollow Road and Grandview

- a. Analyze Stream Condition with bridge condition
- b. Analyze discharge pipe and runoff from roadway
- c. Remove sediment in stream bed
- d. Repair wing wall adjacent to Grandview bridge
- e. Repair/stabilize embankments downstream of bridge



Western Wing Wall, Grandview Avenue Bridge



Western embankment adjacent to Hollow Road at Grandview Avenue Bridge

9.3 General Types of Mitigation Projects

All mitigation projects are to be under the review and approval of the Montgomery Township Engineering Department. The general type mitigation projects within Montgomery Township are:

1. Repair of Roadside Swales:

- a. Analyze flows to roadside swale.
- b. Perform soil stabilization analysis.
- c. Determine possible design options
 - i. Install storm pipe, inlets in lieu of swale
 - ii. Redesign side slopes of swale
 - iii. Provide slope stability in swale.

All repairs of roadside swales will be approved by the Montgomery Township Engineering Department and the Somerset Union Conservation District. The repair of roadside swales will improve water quality by reducing total suspended solids that reach the stream. The priority of swales to be repaired within Township right-of-ways shall be determined by the Montgomery Township Engineering Department.



Swale repaired with rip rap, note gentle slope from pavement edge



Landscaped swale at Cherry Valley Road

2. Stormwater Basin Retrofit

Provide water quality and recharge measures at existing stormwater basins within the same HUC14 under the guidance of the Montgomery Township Engineering Department. The retrofit of existing basins may be accomplished through a variety and/or combination of options to meet the mitigation costs required. Retrofitting of basins should start with stormwater basins that are isolated from public view and not utilized for recreational activities. As the implementation of the Stormwater Pollution Prevention Plan and the educational outreach activities increase the general public's understanding of stormwater management and the fact that basins may hold water after a rainfall event in order to provide water quality, existing basins within the public view may be considered for retrofit. Review of each existing basin condition and surrounding condition should be reviewed with the Township before selecting one or more of the following options:

- a. Outlet Structure Modifications
- b. Regrading and Planting
- c. Elimination of Low Flow Channels

d. Installation of in-line or end-of-pipe Best Management Practice (BMP) as approved by the NJDEP to treat stormwater before it enters into an existing stormwater management basin. Acceptable devices can be found at njstormwater.org.



3. Stream and Stream Bank Stabilization

Mitigation projects other than those listed meeting the following criteria may be presented for review and approval by the Montgomery Township Engineering Department. Stabilization projects will be reviewed for the following benefits:

- a. Stabilization of eroded stream banks where public or private property or structures are threatened.
- b. Reduce sediment deposition in lakes, ponds and other low velocity areas.
- c. Improved water quality



Example of Stream Embankment Conditions along Rock Brook
causing Sediment Load and Loss of Trees

4. Stormwater Outfall Restoration

Mitigation of Existing Stormwater Outfalls within the same HUC14 under the guidance of the Montgomery Township Engineering Department. The retrofit of existing outfalls may be accomplished through a variety and/or combination of options to meet the mitigation costs required. Review of each existing outfall condition should be reviewed with the Township before selecting one or more of the following options:

- a. Replacement of failed outfall structure with outlet protection
- b. Replacement with installation of drop manhole to set outfall structure at invert of stream channel with outlet protection
- c. Installation of in-line or end-of-pipe Best Management Practice (BMP) as approved by the NJDEP to treat stormwater before the outfall point. Acceptable devices can be found at NJDEP's website www.njstormwater.org.

- d. Disconnect outfall from receiving waterway to eliminate erosion condition. Permitted only with detailed hydrologic analysis and stability analysis of the receiving area.

5. Inlet Retrofit

Retrofit existing inlets with the following:

- a. Metal Campbell bar insert to retrofit
- b. Replacement of cast curb piece
- c. Replacement of flat grate with a bicycle safe grate

All retrofits of inlets will be approved by the Montgomery Township Engineering Department to meet NJDEP Attachment "C" of the MS4 Permit requirements. The inserts improve water quality by reducing floatables and materials that reach the bottom of the inlet to decay and that ultimately reach the stream. The priority of inlets to be retrofit within Township right-of-ways shall be determined by the Montgomery Township Engineering department and shall be based on street most recently repaved. By including these inlets as a mitigation option, the Township of Montgomery will be improving water quality on public right-of-ways that will not be repaved or resurfaced for the greatest number of years.

10.0 Summary

The Stormwater Management Plan will be presented to the Montgomery Township Planning Board at a public hearing on August 22, 2005, as required for the Township of Montgomery to meet the requirements of the Montgomery Township NJPDES MS4 permit. If adopted the stormwater management plan will become an element of the Montgomery Township Master Plan.

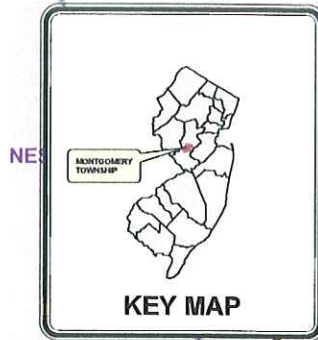
The ordinances included as Attachments to the Township of Montgomery Municipal Stormwater Management Plan must be reviewed and adopted by the Montgomery Township Committee prior to April 1, 2006 in order to go into effect and to meet the requirements of the Montgomery Township NJPDES MS4 permit.

A copy of the adopted Township of Montgomery Stormwater Management Plan will be submitted to Somerset County Planning for review and approval.

The Township of Montgomery Stormwater Management Plan represents the beginning of a new process in which municipalities participate in improving water quality conditions from non-point source pollution. The Township of Montgomery Stormwater Management Plan will improve the non-point source pollution conditions to the Millstone River, Rock Brook, Beden Brook, Pike Run and Cruser Brook.

APPENDIXES

Maps 1-12



/SNR CONFL)

HILLSBOROUGH TOWNSHIP
SOMERSET COUNTY

HILLSBOROUGH TOWNSHIP
SOMERSET COUNTY



FRANKLIN TOWNSHIP
SOMERSET COUNTY

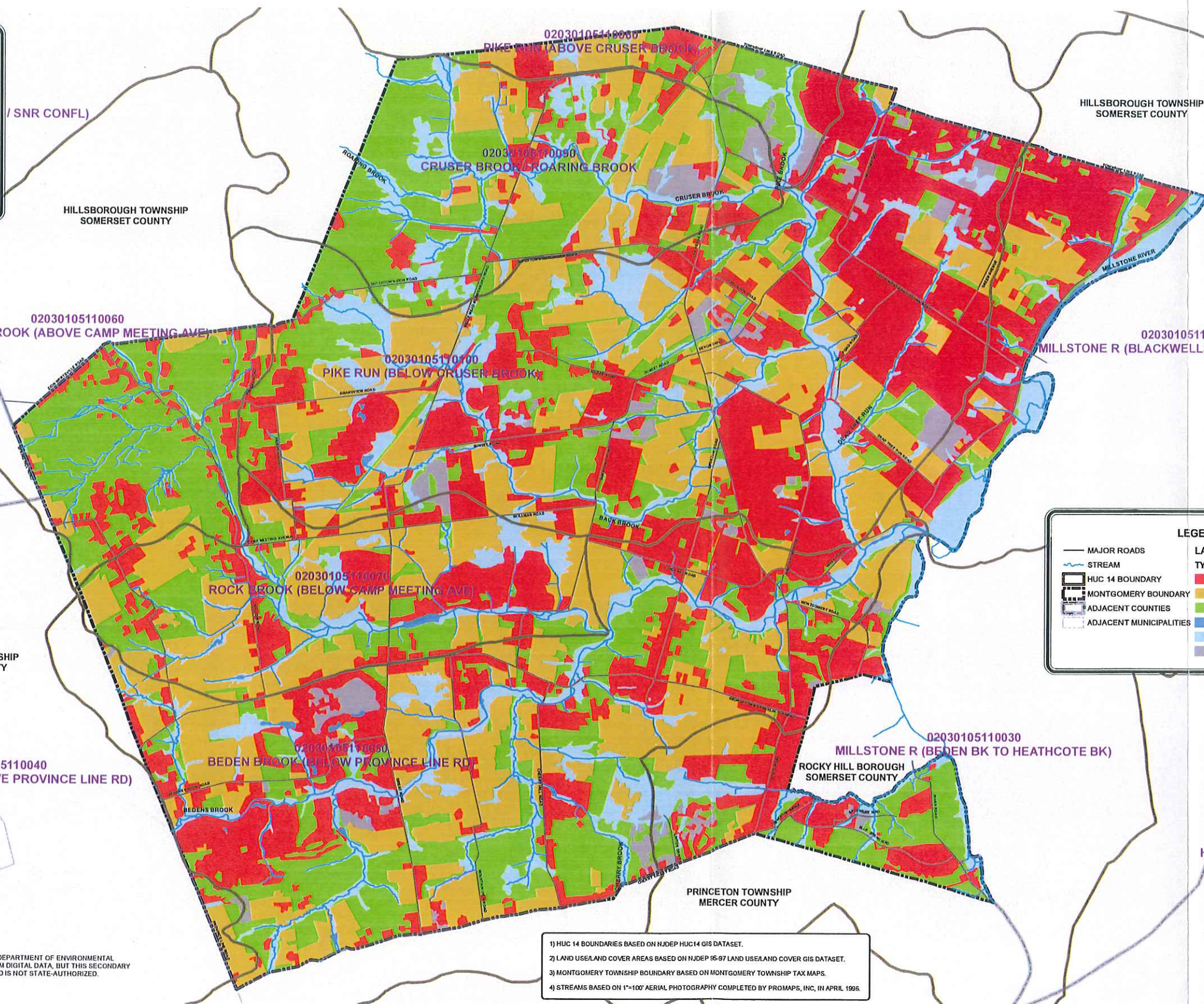
EAST AMWELL TOWNSHIP
HUNTERDON COUNTY

HOPEWELL TOWNSHIP
MERCER COUNTY

02030105110040
BEDEN BROOK (ABOVE PROVINCE LINE RD)

HOPEWELL BOROUGH
MERCER COUNTY

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.



MAJOR ROADS

STREAM

HUC 14 BOUNDARY

MONTGOMERY BOUNDARY

ADJACENT COUNTIES

ADJACENT MUNICIPALITIES

LEGEND

LAND USE/LAND COVER 1995

TYPE95

URBAN

AGRICULTURE

FOREST

WATER

WETLANDS

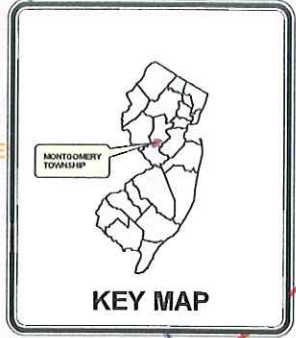
BARREN LAND

- 1) HUC 14 BOUNDARIES BASED ON NJDEP HUC14 GIS DATASET.
- 2) LAND USE/LAND COVER AREAS BASED ON NJDEP 95-97 LAND USE/LAND COVER GIS DATASET.
- 3) MONTGOMERY TOWNSHIP BOUNDARY BASED ON MONTGOMERY TOWNSHIP TAX MAPS.
- 4) STREAMS BASED ON 1"-100' AERIAL PHOTOGRAPHY COMPLETED BY PROMAPS, INC. IN APRIL 1995.

DRAWN BY: P.A.M.	CHECKED BY:
DATE: MAY 17, 2005	LAST REVISED: JULY 20, 2005
<small>COPYRIGHT(C) 2005 TOWNSHIP OF MONTGOMERY, A MUNICIPAL CORPORATION OF THE STATE OF NEW JERSEY. THIS MAP AND ALL DATA CONTAINED HEREIN ARE SUPPLIED AS IS WITH NO WARRANTY. THE TOWNSHIP OF MONTGOMERY DOES NOT WARRANT, REPRESENT, OR GUARANTEE THE ACCURACY, COMPLETENESS, OR QUALITY OF THE DATA. THE TOWNSHIP OF MONTGOMERY DOES NOT PREPARE, REVIEW, OR ENDORSE THE SECONDARY MAP PRODUCT. THE TOWNSHIP OF MONTGOMERY MAKES NO REPRESENTATION OF ANY KIND INCLUDING, BUT NOT LIMITED TO, THE ACCURACY, COMPLETENESS, OR QUALITY OF THE DATA. THE TOWNSHIP OF MONTGOMERY DOES NOT PREPARE, REVIEW, OR ENDORSE THE SECONDARY MAP PRODUCT. THE TOWNSHIP OF MONTGOMERY MAKES NO REPRESENTATION OF ANY KIND INCLUDING, BUT NOT LIMITED TO, THE ACCURACY, COMPLETENESS, OR QUALITY OF THE DATA. THE TOWNSHIP OF MONTGOMERY DOES NOT PREPARE, REVIEW, OR ENDORSE THE SECONDARY MAP PRODUCT.</small>	

TOWNSHIP OF MONTGOMERY
SOMERSET COUNTY, NEW JERSEY
GEOGRAPHIC INFORMATION SYSTEM

MUNICIPAL STORMWATER
MANAGEMENT PLAN
EXISTING LAND USE/LAND COVER



(SNR CONFL)

HILLSBOROUGH TOWNSHIP
SOMERSET COUNTY

HILLSBOROUGH TOWNSHIP
SOMERSET COUNTY

FRANKLIN TOWNSHIP
SOMERSET COUNTY

EAST AMWELL TOWNSHIP
HUNTERDON COUNTY

HOPEWELL TOWNSHIP
MERCER COUNTY

02030105110040
BEDEN BROOK (ABOVE PROVINCE LINE RD)

HOPEWELL BOROUGH
MERCER COUNTY

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.

02030105110090
CRUSER BROOK / ROARING BROOK

02030105110100
PIKE RUN (BELOW CRUSER BROOK)

02030105110070
ROCK BROOK (BELOW CAMP MEETING AVE)

02030105110050
BEDEN BROOK (BELOW PROVINCE LINE RD)

PRINCETON TOWNSHIP
MERCER COUNTY

02030105110030
MILLSTONE R (BEDEN BK TO HEATHCOTE BK)

ROCKY HILL BOROUGH
SOMERSET COUNTY

02030105110010
HEATHCOTE BROOK

SOUTH BRUNSWICK TOWNSHIP
MIDDLESEX COUNTY

LEGEND

- MAJOR ROADS
- STREAM
- HUC 14 BOUNDARY
- MONTGOMERY BOUNDARY
- ADJACENT COUNTIES
- ADJACENT MUNICIPALITIES



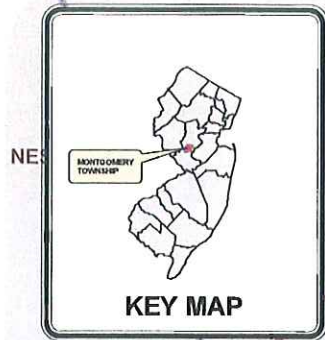
- 1) HUC 14 BOUNDARIES BASED ON NJDEP HUC14 GIS DATASET.
- 2) 2001 ORTHOPHOTOGRAPHY BY PIXURES, INC.
- 3) MONTGOMERY TOWNSHIP BOUNDARY BASED ON MONTGOMERY TOWNSHIP TAX MAPS.
- 4) STREAMS BASED ON MONTGOMERY TOWNSHIP STREAM GIS DATASET.

DATE: MAY 17, 2005	DRAWN BY: P.A.M.
LAST REVISED: JULY 20, 2005	CHECKED BY:

MUNICIPAL STORMWATER MANAGEMENT PLAN EXISTING CONDITIONS

TOWNSHIP OF MONTGOMERY SOMERSET COUNTY, NEW JERSEY GEOGRAPHIC INFORMATION SYSTEM

CONTRACTOR: THE TOWNSHIP OF MONTGOMERY, AN UNINCORPORATED POLYMER OF NEW JERSEY, HAS NOT BEEN VERIFIED BY NJDEP AND IS NOT STATE-AUTHORIZED. THE TOWNSHIP OF MONTGOMERY EXPRESSLY DISCLAIMS RESPONSIBILITY FOR DAMAGES OR LIABILITY THAT MAY BE INCURRED BY ANY USER OF THIS MAP. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL ENGINEER, ARCHITECT, OR LANDSCAPE ARCHITECT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL SURVEYOR. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL PLANNING CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL ENVIRONMENTAL CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL GEOLOGIST. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL HISTORIC PRESERVATION CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL SOCIAL SCIENCE CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL ECONOMIC DEVELOPMENT CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL PUBLIC RELATIONS CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL POLITICAL CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL LEGAL CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL FINANCIAL CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL REAL ESTATE CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL INSURANCE CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL TAX CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL ACCOUNTING CONSULTANT. THE TOWNSHIP OF MONTGOMERY IS NOT A PROFESSIONAL CONSULTANT IN ANY OTHER FIELD.



NE / SNR CONFL)

HILLSBOROUGH TOWNSHIP
SOMERSET COUNTY

HILLSBOROUGH TOWNSHIP
SOMERSET COUNTY



FRANKLIN TOWNSHIP
SOMERSET COUNTY

EAST AMWELL TOWNSHIP
HUNTERDON COUNTY

HOPEWELL TOWNSHIP
MERCER COUNTY

02030105110040
BEDEN BROOK (ABOVE PROVINCE LINE RD)

HOPEWELL BOROUGH
MERCER COUNTY

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.

02030105110060
ROCK BROOK (ABOVE CAMP MEETING AVE)

02030105110070
ROCK BROOK (BELOW CAMP MEETING AVE)

02030105110050
BEDEN BROOK (BELOW PROVINCE LINE RD)

02030105110090
CRUSER BROOK / ROARING BROOK

02030105110100
PIKE RUN (BELOW CRUSER BROOK)

02030105110000
PIKE RUN (ABOVE CRUSER BROOK)

02030105110030
MILLSTONE R (BEDEN BK TO HEATHCOTE BK)

02030105110110
MILLSTONE R (BLACKWELLSMILLS TO BEDENBK)

02030105110010
HEATHCOTE BROOK

SOUTH BRUNSWICK TOWNSHIP
MIDDLESEX COUNTY

PRINCETON TOWNSHIP
MERCER COUNTY

LEGEND

- MAJOR ROADS
- HUC 14 BOUNDARY
- STREAM
- MONTGOMERY BOUNDARY
- ADJACENT COUNTIES
- ADJACENT MUNICIPALITIES
- LAND USE/LAND COVER 1995
TYPE95
- OPEN WATERS
- WETLANDS

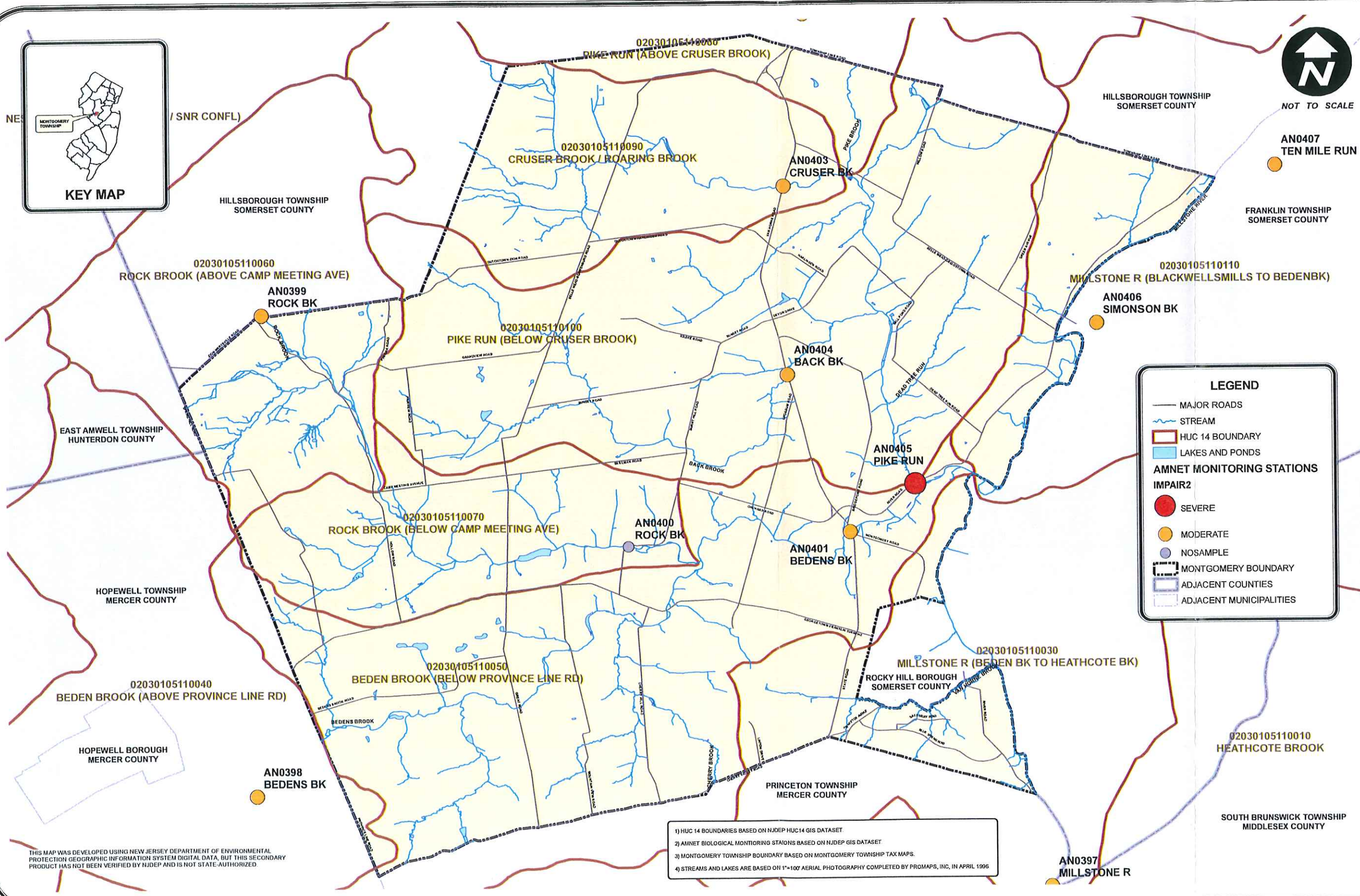
- 1) HUC 14 BOUNDARIES BASED ON NJDEP HUC14 GIS DATASET.
- 2) WETLANDS AND OPEN WATERS AREAS EXTRACTED FROM NJDEP 95-97 LAND USE/LAND COVER GIS DATASET.
- 3) MONTGOMERY TOWNSHIP BOUNDARY BASED ON MONTGOMERY TOWNSHIP TAX MAPS.
- 4) STREAMS BASED ON 1"-100' AERIAL PHOTOGRAPHY COMPLETED BY PROMAPS, INC. IN APRIL 1996.

DATE: MAY 17, 2005	DRAWN BY: P.A.M.
LAST REVISED: JULY 20, 2005	CHECKED BY:

COPYRIGHT © 2005 TOWNSHIP OF MONTGOMERY, A MUNICIPAL CORPORATION OF THE STATE OF NEW JERSEY. THIS MAP AND ALL DATA CONTAINED HEREIN ARE SUPPLIED AS IS WITH NO WARRANTY. THE TOWNSHIP OF MONTGOMERY, NEW JERSEY, AND ITS EMPLOYEES, AGENTS, OR CONTRACTORS, SHALL NOT BE RESPONSIBLE FOR ANY DAMAGE, LOSS, OR INJURY, INCLUDING REASONABLE ATTORNEY'S FEES, ARISING OUT OF OR FROM THE USE OF THIS MAP. THE DATA REPORTED HEREIN WAS DEVELOPED BY THE TOWNSHIP OF MONTGOMERY, NEW JERSEY, AND ITS EMPLOYEES, AGENTS, OR CONTRACTORS. THE TOWNSHIP OF MONTGOMERY, NEW JERSEY, DOES NOT WARRANT, REPRESENT, OR GUARANTEE THE ACCURACY, COMPLETENESS, OR RELIABILITY OF THE DATA ON THIS MAP. THE USER'S RESPONSIBILITY IS TO OBTAIN NECESSARY SURVEY DATA, NOT SHOWN ON THIS MAP, TO DETERMINE THE DATA ON THIS MAP MEETS THE USER'S NEEDS. REVISIONS WILL NOT BE MADE TO THIS MAP. THIS MAP IS THE PROPERTY OF THE TOWNSHIP OF MONTGOMERY, NEW JERSEY, AND IS LOANED TO THE USER. IT IS TO BE RETURNED TO THE TOWNSHIP OF MONTGOMERY, NEW JERSEY, WHEN REQUIRED BY NEW JERSEY LAW.

**MUNICIPAL STORMWATER
MANAGEMENT PLAN
WETLANDS AND OPEN WATERS**

**TOWNSHIP OF MONTGOMERY
SOMERSET COUNTY, NEW JERSEY
GEOGRAPHIC INFORMATION SYSTEM**



LEGEND

- MAJOR ROADS
- STREAM
- HUC 14 BOUNDARY
- LAKES AND PONDS
- AMNET MONITORING STATIONS
- IMPAIR2
 - SEVERE
 - MODERATE
 - NOSAMPLE
- MONTGOMERY BOUNDARY
- ADJACENT COUNTIES
- ADJACENT MUNICIPALITIES

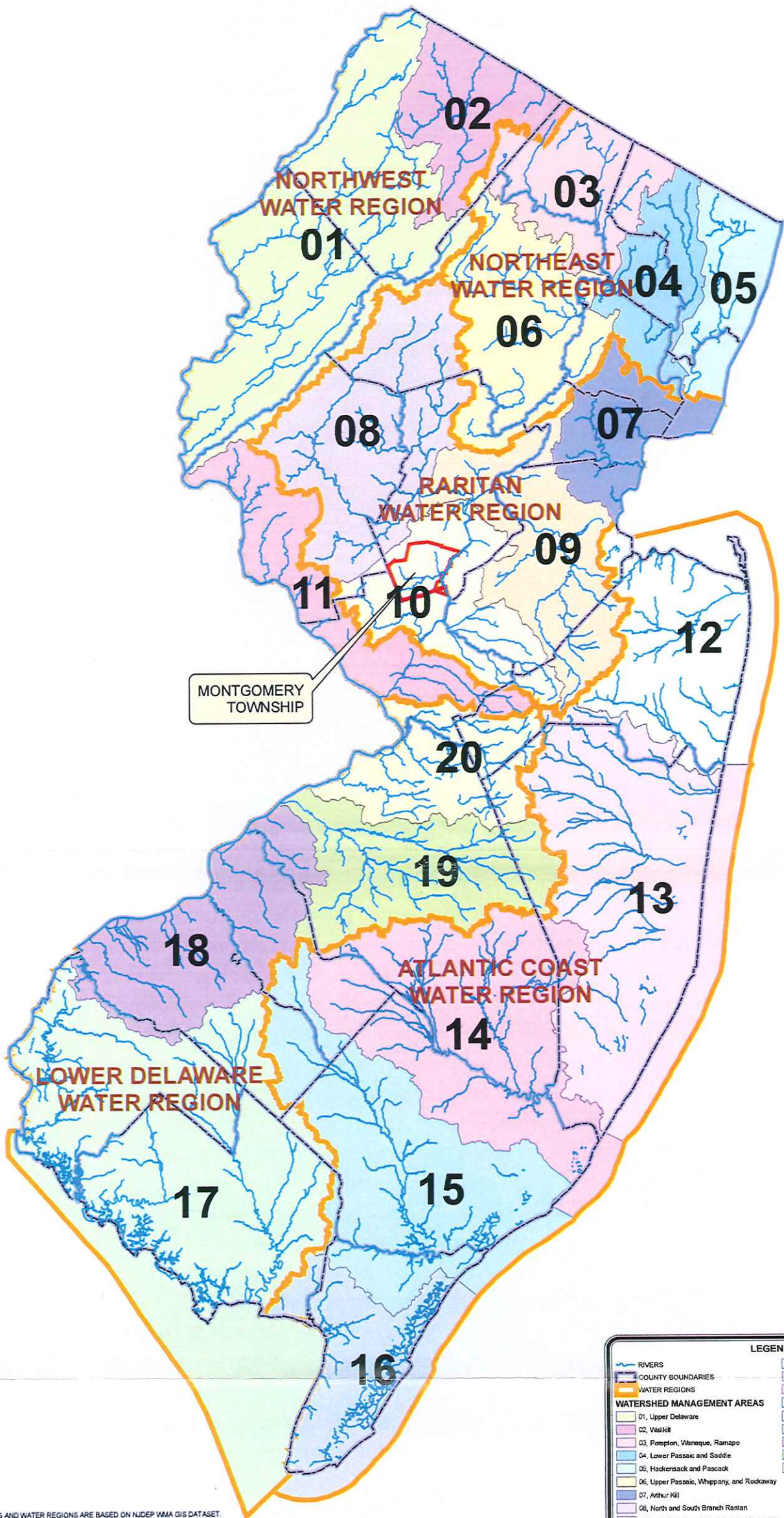
- 1) HUC 14 BOUNDARIES BASED ON NJDEP HUC14 GIS DATASET
- 2) AMNET BIOLOGICAL MONITORING STATIONS BASED ON NJDEP GIS DATASET
- 3) MONTGOMERY TOWNSHIP BOUNDARY BASED ON MONTGOMERY TOWNSHIP TAX MAPS
- 4) STREAMS AND LAKES ARE BASED ON 1"=100' AERIAL PHOTOGRAPHY COMPLETED BY PROMAPS, INC. IN APRIL 1996

DRAWN BY: P. A.M.	CHECKED BY:
DATE: MAY 16, 2005	LAST REVISED: JULY 20, 2005

**MUNICIPAL STORMWATER
MANAGEMENT PLAN
AMNET STREAM BIOLOGICAL
MONITORING STATIONS**

**TOWNSHIP OF MONTGOMERY
SOMERSET COUNTY, NEW JERSEY
GEOGRAPHIC INFORMATION SYSTEM**

NAD 83 NJ STATE PLANE
COORDINATE SYSTEM



- 1) WATERSHED MANAGEMENT AREAS AND WATER REGIONS ARE BASED ON NJDEP WMA GIS DATASET.
2) RIVERS ARE BASED ON NJDEP RIVERS GIS DATASET.
3) COUNTY BOUNDARIES ARE BASED ON NJDEP STCO GIS DATASET.
4) MONTGOMERY TOWNSHIP BOUNDARY IS BASED ON NJDEP STMUN GIS DATASET.

LEGEND	
RIVERS	12, Morristown
COUNTY BOUNDARIES	13, Barnegat Bay
WATER REGIONS	14, Mullica
WATERSHED MANAGEMENT AREAS	
01, Upper Delaware	15, Great Egg Harbor
02, Wallkill	16, Cape May
03, Pompton, Wanaque, Ramapo	17, Maurice, Salem, and Cohamsey
04, Lower Passaic and Saddle	18, Lower Delaware
05, Hackensack and Passaic	19, Rancocas
06, Upper Passaic, Whippany, and Rockaway	20, Assiscunk, Crosswicks, and Doctors
07, Arthur Kill	
08, North and South Branch Raritan	
09, Lower Raritan, South River, and Lawrence	
10, Millstone	
11, Central Delaware	



TOWNSHIP OF MONTGOMERY
SOMERSET COUNTY, NEW JERSEY
GEOGRAPHIC INFORMATION SYSTEM

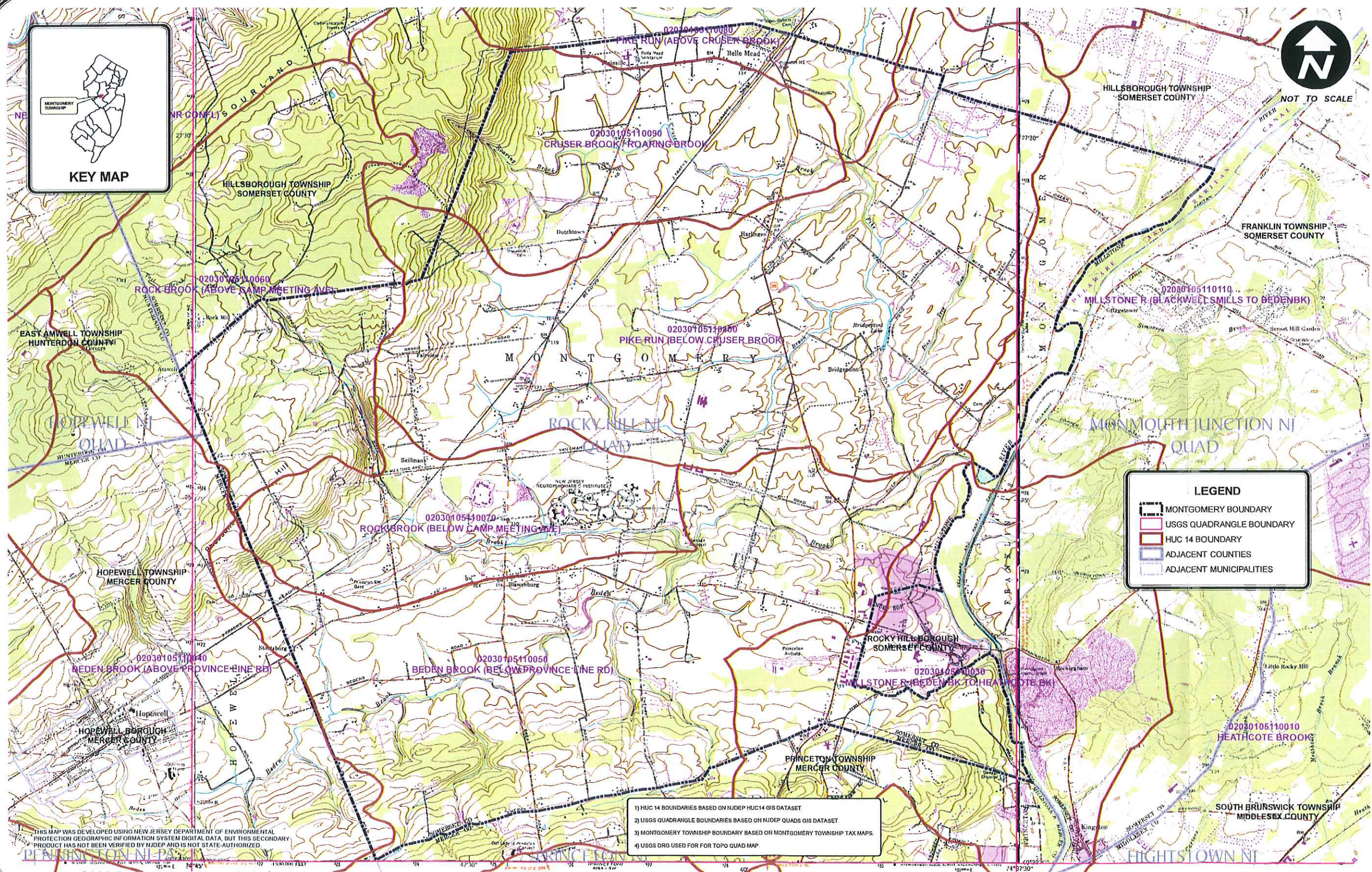
THIS MAP WAS DEVELOPED USING NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION GIS DATA. THE DATA IS PROVIDED AS IS. THE USER ASSUMES ALL LIABILITY FOR THE USE OF THIS DATA. THE DATA IS NOT GUARANTEED TO BE ACCURATE OR COMPLETE.

MUNICIPAL STORMWATER MANAGEMENT PLAN
WATERSHED MANAGEMENT AREAS
AND WATER REGIONS

DATE: MAY 17, 2005
DRAWN BY: P.A.M.

LAST REVISED:
CHECKED BY:

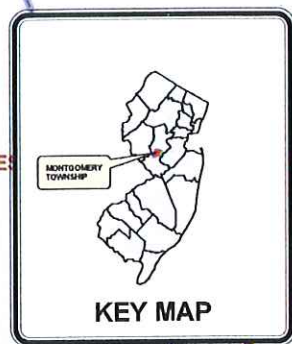
THIS MAP IS THE PROPERTY OF THE TOWNSHIP OF MONTGOMERY. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF THE TOWNSHIP OF MONTGOMERY. THE TOWNSHIP OF MONTGOMERY IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS IN THIS MAP. THE TOWNSHIP OF MONTGOMERY IS NOT RESPONSIBLE FOR ANY DAMAGE TO PERSONS OR PROPERTY THAT MAY RESULT FROM THE USE OF THIS MAP.



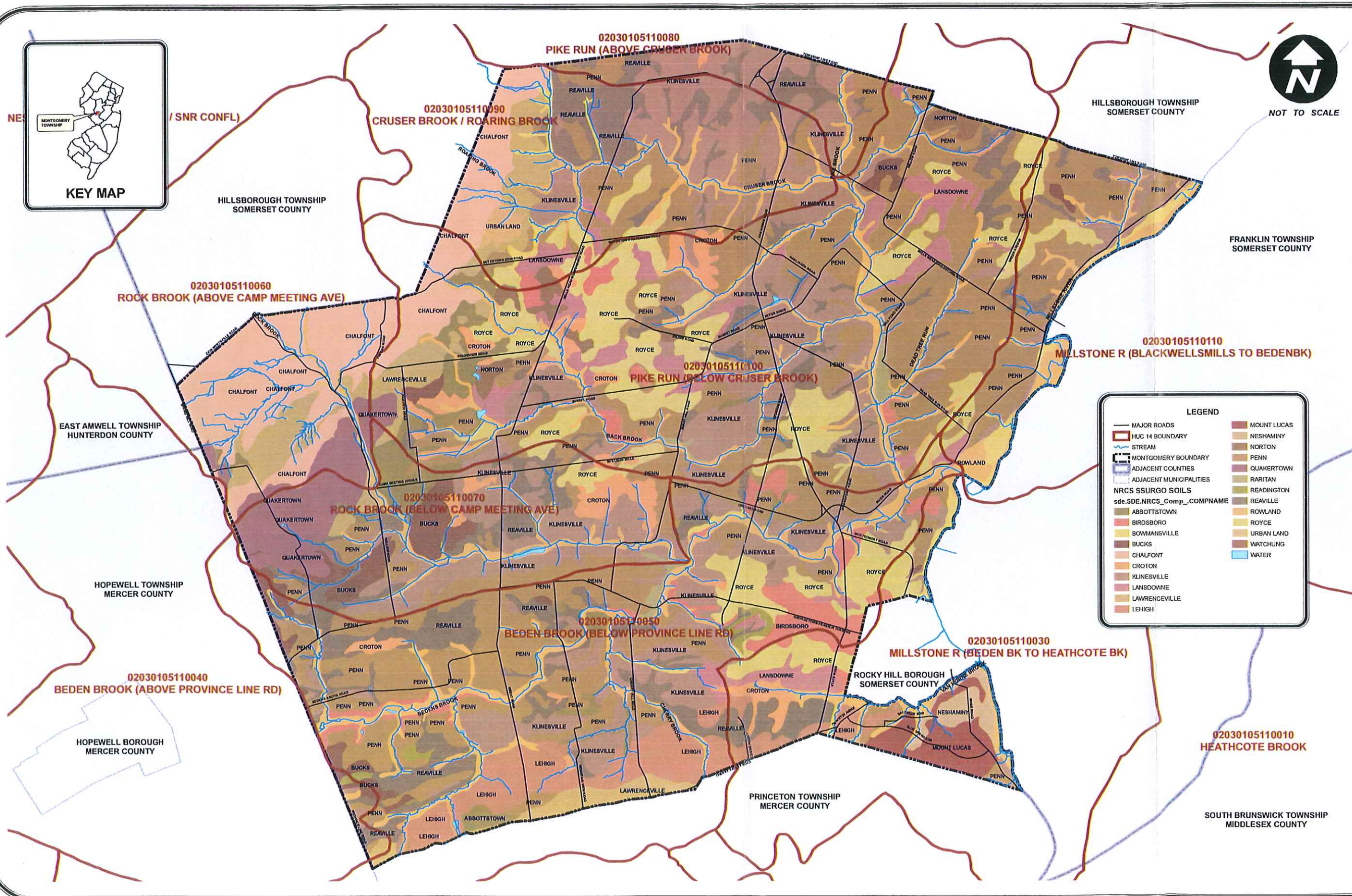
DATE: MAY 16, 2005
DRAWN BY: P.A.M.
LAST REVISED: JULY 20, 2005
CHECKED BY:

**MUNICIPAL STORMWATER
MANAGEMENT PLAN
HUC14 (SUBWATERSHEDS)
AND USGS QUADRANGLES**

**TOWNSHIP OF MONTGOMERY
SOMERSET COUNTY, NEW JERSEY
GEOGRAPHIC INFORMATION SYSTEM**



NOT TO SCALE



LEGEND

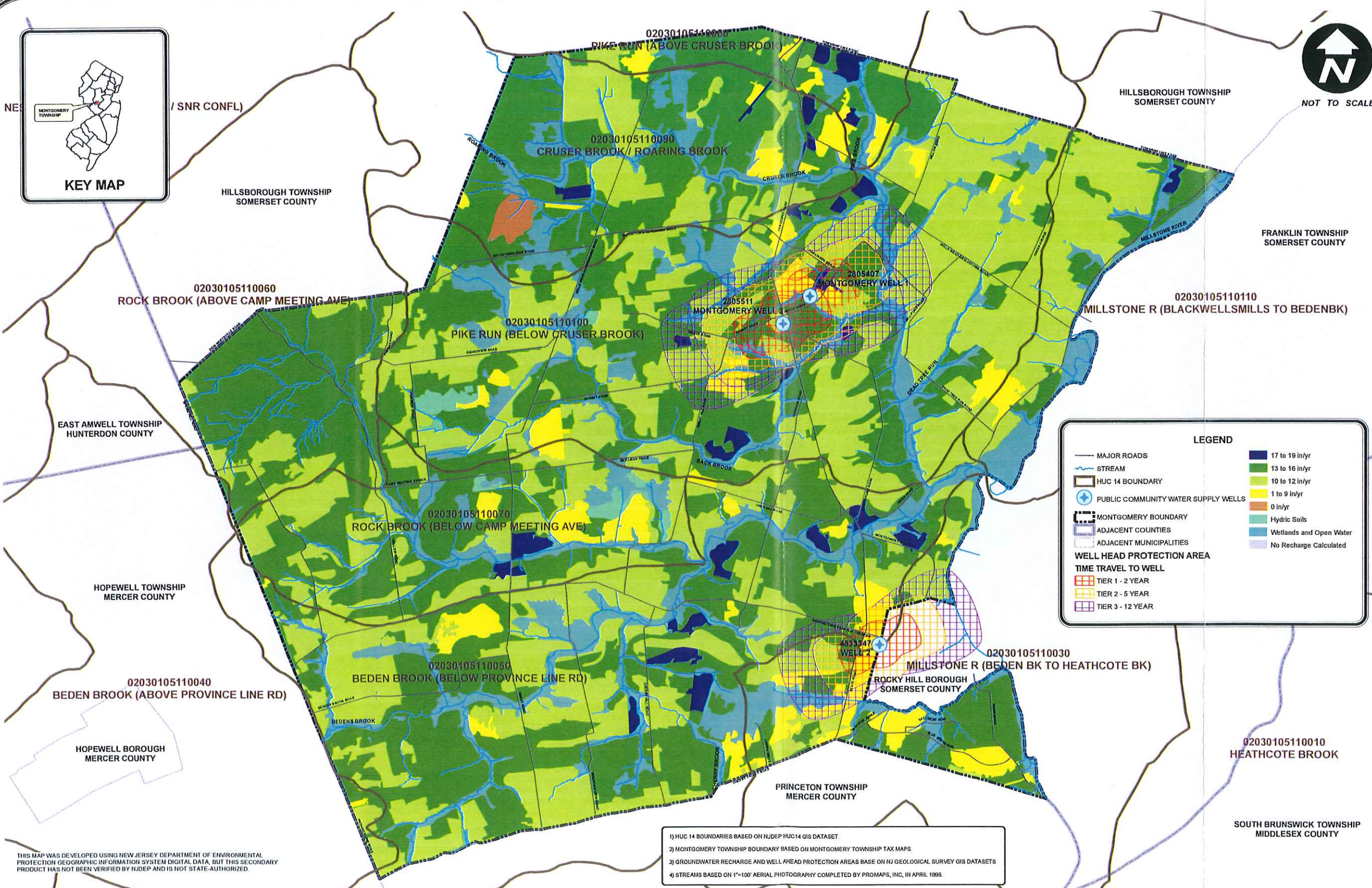
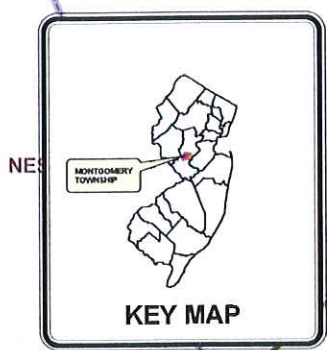
MAJOR ROADS	MOUNT LUCAS
HUC 14 BOUNDARY	NESHAMINY
STREAM	NORTON
MONTGOMERY BOUNDARY	PENN
ADJACENT COUNTIES	QUAKERTOWN
ADJACENT MUNICIPALITIES	RARITAN
NRCS SSURGO SOILS	READINGTON
sde.SDE.NRCS_Comp_COMPNAM	REAVILLE
ABBOTTSTOWN	ROWLAND
BIRDSBORO	ROYCE
BOWMANVILLE	URBAN LAND
BUCKS	WATCHUNG
CHALFONT	WATER
CROTON	
KLINESVILLE	
LANDOWNE	
LAWRENCEVILLE	
LEHIGH	

DRAWN BY: P.A.M.
CHECKED BY:
DATE: MAY 17, 2005
LAST REVISED: JULY 20, 2005

COPYRIGHT © 2005 TOWNSHIP OF MONTGOMERY, A MUNICIPAL CORPORATION OF THE STATE OF NEW JERSEY. ALL RIGHTS RESERVED. THIS MAP IS THE PROPERTY OF THE TOWNSHIP OF MONTGOMERY AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF THE TOWNSHIP OF MONTGOMERY. THE TOWNSHIP OF MONTGOMERY DOES NOT WARRANT THE ACCURACY OF THE DATA OR THE RESULTS OF THE ANALYSIS. THE TOWNSHIP OF MONTGOMERY DOES NOT ASSUME ANY LIABILITY FOR ANY DAMAGES, INCLUDING CONSEQUENTIAL DAMAGES, ARISING FROM THE USE OF THIS MAP. THE DATA HEREON HAS BEEN DEVELOPED FROM AERIAL PHOTOGRAPHY AND FIELD SURVEY DATA. THE TOWNSHIP OF MONTGOMERY DOES NOT WARRANT THE ACCURACY OF THE DATA OR THE RESULTS OF THE ANALYSIS. THE TOWNSHIP OF MONTGOMERY DOES NOT ASSUME ANY LIABILITY FOR ANY DAMAGES, INCLUDING CONSEQUENTIAL DAMAGES, ARISING FROM THE USE OF THIS MAP. THE DATA HEREON HAS BEEN DEVELOPED FROM AERIAL PHOTOGRAPHY AND FIELD SURVEY DATA. THE TOWNSHIP OF MONTGOMERY DOES NOT WARRANT THE ACCURACY OF THE DATA OR THE RESULTS OF THE ANALYSIS. THE TOWNSHIP OF MONTGOMERY DOES NOT ASSUME ANY LIABILITY FOR ANY DAMAGES, INCLUDING CONSEQUENTIAL DAMAGES, ARISING FROM THE USE OF THIS MAP. THE DATA HEREON HAS BEEN DEVELOPED FROM AERIAL PHOTOGRAPHY AND FIELD SURVEY DATA.

MUNICIPAL STORMWATER MANAGEMENT PLAN NRCS SSURGO SOIL TYPES

TOWNSHIP OF MONTGOMERY
SOMERSET COUNTY, NEW JERSEY
GEOGRAPHIC INFORMATION SYSTEM



- 1) HUC 14 BOUNDARIES BASED ON NJDEP HUC14 GIS DATASET.
- 2) MONTGOMERY TOWNSHIP BOUNDARY BASED ON MONTGOMERY TOWNSHIP TAX MAPS.
- 3) GROUNDWATER RECHARGE AND WELL HEAD PROTECTION AREAS BASE ON NJ GEOLOGICAL SURVEY GIS DATASETS.
- 4) STREAMS BASED ON 1"=100' AERIAL PHOTOGRAPHY COMPLETED BY PROMAPS, INC. IN APRIL 1996.

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.

DATE: MAY 17, 2005	DRAWN BY: P.A.M.
LAST REVISED: JULY 20, 2005	CHECKED BY:

COPYRIGHT: © 2005 TOWNSHIP OF MONTGOMERY, A MUNICIPAL CORPORATION OF THE STATE OF NEW JERSEY. ALL RIGHTS RESERVED. THIS MAP IS A SECONDARY PRODUCT PRODUCED FROM DATA EXTRACTED FROM THE TOWNSHIP OF MONTGOMERY'S GIS DATASETS. IT IS NOT A PRIMARY PRODUCT AND DOES NOT REPRESENT THE TOWNSHIP'S OFFICIAL POSITION. THE TOWNSHIP OF MONTGOMERY MAKES NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, COMPLETENESS, OR SUITABILITY OF THIS MAP FOR ANY PURPOSE. THE USER OF THIS MAP ASSUMES ALL LIABILITY FOR ANY DAMAGE OR LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO, THE LOSS OF DATA, PROFITS, OR REVENUE, ARISING FROM THE USE OF THIS MAP. THE DATA DEPICTED HEREIN HAS BEEN DEVELOPED BY THE TOWNSHIP OF MONTGOMERY AND IS NOT A PRIMARY PRODUCT. THE TOWNSHIP OF MONTGOMERY MAKES NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, COMPLETENESS, OR SUITABILITY OF THIS MAP FOR ANY PURPOSE. THE USER OF THIS MAP ASSUMES ALL LIABILITY FOR ANY DAMAGE OR LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO, THE LOSS OF DATA, PROFITS, OR REVENUE, ARISING FROM THE USE OF THIS MAP.

MUNICIPAL STORMWATER MANAGEMENT PLAN GROUNDWATER RECHARGE AND WELL HEAD PROTECTION AREAS

TOWNSHIP OF MONTGOMERY SOMERSET COUNTY, NEW JERSEY GEOGRAPHIC INFORMATION SYSTEM

ATTACHMENT 1

Township of Montgomery Draft Stormwater Ordinance

Montgomery Township Draft Stormwater Ordinance

This ordinance is provided within the Stormwater Management Plan as a requirement of NJAC 7:8-4.1(c)12. The Model Ordinance should be used in the forthcoming months in the development of specific municipal stormwater control ordinances and design and performance standards specific to Montgomery Township. This ordinance does not include a section on fees. The costs of reviewing development applications under this ordinance can be defrayed by fees charged for review of subdivisions and site plans under N.J.S.A. 40:55D-8.b.

Section 1: Scope and Purpose

A. Policy Statement

Flood control, groundwater recharge, and pollutant reduction through nonstructural or low impact techniques shall be explored before relying on structural BMPs. Structural BMPs should be integrated with nonstructural stormwater management strategies and proper maintenance plans. Nonstructural strategies include both environmentally sensitive site design and source controls that prevent pollutants from being placed on the site or from being exposed to stormwater. Source control plans should be developed based upon physical site conditions and the origin, nature, and the anticipated quantity or amount of potential pollutants. Multiple stormwater management BMPs may be necessary to achieve the established performance standards for water quality, quantity, and groundwater recharge.

B. Purpose

It is the purpose of this ordinance to establish minimum stormwater management requirements and controls for “major development,” as defined in Section 2.

C. Applicability

1. This ordinance shall be applicable to all site plans and subdivisions for the following major developments that require preliminary or final site plan or subdivision review:

- . Non-residential major developments; and
- . Aspects of residential major developments that are not pre-empted by the Residential Site Improvement Standards at N.J.A.C. 5:21.

2. This ordinance shall also be applicable to all major developments undertaken by Montgomery Township.

D. Compatibility with Other Permit and Ordinance Requirements

Development approvals issued for subdivisions and site plans pursuant to this ordinance are to be considered an integral part of development approvals under the subdivision and site plan review process and do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance. In their interpretation and application, the provisions of this ordinance shall be held to be the minimum requirements for the promotion of the public health, safety, and general welfare. This ordinance is not intended to interfere with, abrogate, or annul any other ordinances, rule or regulation, statute, or other provision of law except that, where any provision of this ordinance imposes

Montgomery Township Draft Stormwater Ordinance

restrictions different from those imposed by any other ordinance, rule or regulation, or other provision of law, the more restrictive provisions or higher standards shall control.

Section 2: Definitions

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application. The definitions below are the same as or based on the corresponding definitions in the Stormwater Management Rules at N.J.A.C. 7:8-1.2.

“CAFRA Planning Map” means the geographic depiction of the boundaries for Coastal Planning Areas, CAFRA Centers, CAFRA Cores and CAFRA Nodes pursuant to N.J.A.C. 7:7E-5B.3.

“CAFRA Centers, Cores or Nodes” means those areas within boundaries accepted by the Department pursuant to N.J.A.C. 7:8E-5B.

“Compaction” means the increase in soil bulk density.

“Core” means a pedestrian-oriented area of commercial and civic uses serving the surrounding municipality, generally including housing and access to public transportation.

“County review agency” means an agency designated by the County Board of Chosen Freeholders to review municipal stormwater management plans and implementing ordinance(s). The county review agency may either be:

A county planning agency; or

A county water resource association created under N.J.S.A. 58:16A-55.5, if the ordinance or resolution delegates authority to approve, conditionally approve, or disapprove municipal stormwater management plans and implementing ordinances.

“Department” means the New Jersey Department of Environmental Protection.

“Designated Center” means a State Development and Redevelopment Plan Center as designated by the State Planning Commission such as urban, regional, town, village, or hamlet.

“Design engineer” means a person professionally qualified and duly licensed in New Jersey to perform engineering services that may include, but not necessarily be limited to, development of project requirements, creation and development of project design and preparation of drawings and specifications.

“Development” means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or structure, any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land, by any person, for which permission is required under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq. In the case of development of agricultural lands, development means: any activity that requires a State permit; any activity reviewed by the County Agricultural Board (CAB) and the State Agricultural Development Committee (SADC), and municipal review of any activity not exempted by the Right to Farm Act, N.J.S.A. 4:1C-1 et seq.

Montgomery Township Draft Stormwater Ordinance

- “Drainage area” means a geographic area within which stormwater, sediments, or dissolved materials drain to a particular receiving waterbody or to a particular point along a receiving waterbody.
- “Environmentally critical areas” means an area or feature which is of significant environmental value, including but not limited to: stream corridors; natural heritage priority sites; habitat of endangered or threatened species; large areas of contiguous open space or upland forest; steep slopes; and well head protection and groundwater recharge areas. Habitats of endangered or threatened species are identified using the Department’s Landscape Project as approved by the Department’s Endangered and Nongame Species Program.
- “Empowerment Neighborhood” means a neighborhood designated by the Urban Coordinating Council “in consultation and conjunction with” the New Jersey Redevelopment Authority pursuant to N.J.S.A 55:19-69.
- “Erosion” means the detachment and movement of soil or rock fragments by water, wind, ice or gravity.
- “Impervious surface” means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water.
- “Infiltration” is the process by which water seeps into the soil from precipitation.
- “Major development” means any “development” that provides for ultimately disturbing one or more acres of land. Disturbance for the purpose of this rule is the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation.
- “Municipality” means any city, borough, town, township, or village.
- “Node” means an area designated by the State Planning Commission concentrating facilities and activities which are not organized in a compact form.
- “Nutrient” means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the development of organisms.
- “Person” means any individual, corporation, company, partnership, firm, association, Montgomery Township, or political subdivision of this State subject to municipal jurisdiction pursuant to the Municipal Land Use Law , N.J.S.A. 40:55D-1 et seq.
- “Pollutant” means any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.), thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt, industrial, municipal, agricultural, and construction waste or runoff, or other residue discharged directly or indirectly to the land, ground waters or surface waters of the State, or to a domestic treatment works. “Pollutant” includes both hazardous and nonhazardous pollutants.
- “Recharge” means the amount of water from precipitation that infiltrates into the ground and is not evapotranspired.
- “Sediment” means solid material, mineral or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water or gravity as a product of erosion.

Montgomery Township Draft Stormwater Ordinance

“Site” means the lot or lots upon which a major development is to occur or has occurred.

“Soil” means all unconsolidated mineral and organic material of any origin.

“State Development and Redevelopment Plan Metropolitan Planning Area (PA1)” means an area delineated on the State Plan Policy Map and adopted by the State Planning Commission that is intended to be the focus for much of the state’s future redevelopment and revitalization efforts.

“State Plan Policy Map” is defined as the geographic application of the State Development and Redevelopment Plan’s goals and statewide policies, and the official map of these goals and policies.

“Stormwater” means water resulting from precipitation (including rain and snow) that runs off the land’s surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.

“Stormwater runoff” means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

“Stormwater management basin” means an excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management basin may either be normally dry (that is, a detention basin or infiltration basin), retain water in a permanent pool (a retention basin), or be planted mainly with wetland vegetation (most constructed stormwater wetlands).

“Stormwater management measure” means any structural or nonstructural strategy, practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal non-stormwater discharges into stormwater conveyances.

“Tidal Flood Hazard Area” means a flood hazard area, which may be influenced by stormwater runoff from inland areas, but which is primarily caused by the Atlantic Ocean.

“Urban Coordinating Council Empowerment Neighborhood” means a neighborhood given priority access to State resources through the New Jersey Redevelopment Authority.

“Urban Enterprise Zones” means a zone designated by the New Jersey Enterprise Zone Authority pursuant to the New Jersey Urban Enterprise Zones Act, N.J.S.A. 52:27H-60 et. seq.

“Urban Redevelopment Area” is defined as previously developed portions of areas:

- (1) Delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1), Designated Centers, Cores or Nodes;
- (2) Designated as CAFRA Centers, Cores or Nodes;
- (3) Designated as Urban Enterprise Zones; and
- (4) Designated as Urban Coordinating Council Empowerment Neighborhoods.

“Waters of the State” means the ocean and its estuaries, all springs, streams, wetlands, 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.

“Wetlands” or “wetland” means an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances

Montgomery Township Draft Stormwater Ordinance

does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

Section 3: General Standards

A. Design and Performance Standards for Stormwater Management Measures

1. Stormwater management measures for major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards in Section 4. To the maximum extent practicable, these standards shall be met by incorporating nonstructural stormwater management strategies into the design. If these strategies alone are not sufficient to meet these standards, structural stormwater management measures necessary to meet these standards shall be incorporated into the design.
2. The standards in this ordinance apply only to new major development and are intended to minimize the impact of stormwater runoff on water quality and water quantity in receiving water bodies and maintain groundwater recharge. The standards do not apply to new major development to the extent that alternative design and performance standards are applicable under a regional stormwater management plan or Water Quality Management Plan adopted in accordance with Department rules.

Note: Alternative standards shall provide at least as much protection from stormwater-related loss of groundwater recharge, stormwater quantity and water quality impacts of major development projects as would be provided under the standards in N.J.A.C. 7:8-5.

Section 4: Stormwater Management Requirements for Major Development

- A. The development shall incorporate a maintenance plan for the stormwater management measures incorporated into the design of a major development in accordance with Section 10.
- B. Stormwater management measures shall avoid adverse impacts of concentrated flow on habitat for threatened and endangered species as documented in the Department' Landscape Project or Natural Heritage Database established under N.J.S.A. 13:1B-15.147 through 15.150, particularly *Helonias bullata* (swamp pink) and/or *Clemmys muhlnebergi* (bog turtle).
- C. The following linear development projects are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Sections 4.F and 4.G:
 1. The construction of an underground utility line provided that the disturbed areas are revegetated upon completion;
 2. The construction of an aboveground utility line provided that the existing conditions are maintained to the maximum extent practicable; and
 3. The construction of a public pedestrian access, such as a sidewalk or trail with a maximum width of 14 feet, provided that the access is made of permeable material.
- D. A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Sections 4.F and 4.G may be obtained for the

Montgomery Township Draft Stormwater Ordinance

enlargement of an existing public roadway or railroad; or the construction or enlargement of a public pedestrian access, provided that the following conditions are met:

1. The applicant demonstrates that there is a public need for the project that cannot be accomplished by any other means;
2. The applicant demonstrates through an alternatives analysis, that through the use of nonstructural and structural stormwater management strategies and measures, the option selected complies with the requirements of Sections 4.F and 4.G to the maximum extent practicable;
3. The applicant demonstrates that, in order to meet the requirements of Sections 4.F and 4.G, existing structures currently in use, such as homes and buildings, would need to be condemned; and
4. The applicant demonstrates that it does not own or have other rights to areas, including the potential to obtain through condemnation lands not falling under D.3 above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate the requirements of Sections 4.F and 4.G that were not achievable on-site.

E. Nonstructural Stormwater Management Strategies

1. To the maximum extent practicable, the standards in Sections 4.F and 4.G shall be met by incorporating nonstructural stormwater management strategies set forth at Section 4.E into the design. The applicant shall identify the nonstructural measures incorporated into the design of the project. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management measures identified in Paragraph 2 below into the design of a particular project, the applicant shall identify the strategy considered and provide a basis for the contention.
2. Nonstructural stormwater management strategies incorporated into site design shall:
 - a. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;
 - b. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;
 - c. Maximize the protection of natural drainage features and vegetation;
 - d. Minimize the decrease in the "time of concentration" from pre-construction to post construction. "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the watershed to the point of interest within a watershed;
 - e. Minimize land disturbance including clearing and grading;
 - f. Minimize soil compaction;
 - g. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;

Montgomery Township Draft Stormwater Ordinance

- h. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas;
 - i. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site, in order to prevent or minimize the release of those pollutants into stormwater runoff. Such source controls include, but are not limited to:
 - (1) Site design features that help to prevent accumulation of trash and debris in drainage systems, including features that satisfy Section 4.E.3. below;
 - (2) Site design features that help to prevent discharge of trash and debris from drainage systems;
 - (3) Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and
 - (3) When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules.
3. Site design features identified under Section 4.E.2.i.(2) above shall comply with the following standard to control passage of solid and floatable materials through storm drain inlets. For purposes of this paragraph, "solid and floatable materials" means sediment, debris, trash, and other floating, suspended, or settleable solids. For exemptions to this standard see Section 4.E.3.c below.
- a. Design engineers shall use either of the following grates whenever they use a grate in pavement or another ground surface to collect stormwater from that surface into a storm drain or surface water body under that grate:
 - (1) The New Jersey Department of Transportation (NJDOT) bicycle safe grate, which is described in Chapter 2.4 of the NJDOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines (April 1996); or
 - (2) A different grate, if each individual clear space in that grate has an area of no more than seven (7.0) square inches, or is no greater than 0.5 inches across the smallest dimension.

Examples of grates subject to this standard include grates in grate inlets, the grate portion (non-curb-opening portion) of combination inlets, grates on storm sewer manholes, ditch grates, trench grates, and grates of spacer bars in slotted drains. Examples of ground surfaces include surfaces of roads (including bridges), driveways, parking areas, bikeways, plazas, sidewalks, lawns, fields, open channels, and stormwater basin floors.
 - b. Whenever design engineers use a curb-opening inlet, the clear space in that curb opening (or each individual clear space, if the curb opening has two or more clear spaces) shall have an area of no more than seven (7.0) square inches, or be no greater than two (2.0) inches across the smallest dimension.
 - c. This standard does not apply:

Montgomery Township Draft Stormwater Ordinance

- (1) Where the review agency determines that this standard would cause inadequate hydraulic performance that could not practicably be overcome by using additional or larger storm drain inlets that meet these standards;
 - (2) Where flows from the water quality design storm as specified in Section 4.G.1 are conveyed through any device (e.g., end of pipe netting facility, manufactured treatment device, or a catch basin hood) that is designed, at a minimum, to prevent delivery of all solid and floatable materials that could not pass through one of the following:
 - (a) A rectangular space four and five-eighths inches long and one and one-half inches wide (this option does not apply for outfall netting facilities); or
 - (b) A bar screen having a bar spacing of 0.5 inches.
 - (3) Where flows are conveyed through a trash rack that has parallel bars with one-inch (1") spacing between the bars, to the elevation of the water quality design storm as specified in Section 4.G.1; or
 - (4) Where the New Jersey Department of Environmental Protection determines, pursuant to the New Jersey Register of Historic Places Rules at N.J.A.C. 7:4-7.2(c), that action to meet this standard is an undertaking that constitutes an encroachment or will damage or destroy the New Jersey Register listed historic property.
4. Any land area used as a nonstructural stormwater management measure to meet the performance standards in Sections 4.F and 4.G shall be dedicated to a government agency, subjected to a conservation restriction filed with the appropriate County Clerk's office, or subject to an approved equivalent restriction that ensures that measure or an equivalent stormwater management measure approved by the reviewing agency is maintained in perpetuity.
5. Guidance for nonstructural stormwater management strategies is available in the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in Section 7, or found on the Department's website at www.njstormwater.org.

F. Erosion Control, Groundwater Recharge and Runoff Quantity Standards

1. This subsection contains minimum design and performance standards to control erosion, encourage and control infiltration and groundwater recharge, and control stormwater runoff quantity impacts of major development.
 - a. The minimum design and performance standards for erosion control are those established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq. and implementing rules.
 - b. The minimum design and performance standards for groundwater recharge are as follows:
 - (1) The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at Section 5, either:

Montgomery Township Draft Stormwater Ordinance

- (a) Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site; or
 - (b) Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the 2-year storm is infiltrated.
 - (2) This groundwater recharge requirement does not apply to projects within the “urban redevelopment area,” or to projects subject to (3) below.
 - (3) The following types of stormwater shall not be recharged:
 - (a) Stormwater from areas of high pollutant loading. High pollutant loading areas are areas in industrial and commercial developments where solvents and/or petroleum products are loaded/unloaded, stored, or applied, areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than “reportable quantities” as defined by the United States Environmental Protection Agency (EPA) at 40 CFR 302.4; areas where recharge would be inconsistent with Department approved remedial action work plan or landfill closure plan and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities; and
 - (b) Industrial stormwater exposed to “source material.” “Source material” means any material(s) or machinery, located at an industrial facility, that is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.
 - (4) The design engineer shall assess the hydraulic impact on the groundwater table and design the site so as to avoid adverse hydraulic impacts. Potential adverse hydraulic impacts include, but are not limited to, exacerbating a naturally or seasonally high water table so as to cause surficial ponding, flooding of basements, or interference with the proper operation of subsurface sewage disposal systems and other subsurface structures in the vicinity or downgradient of the groundwater recharge area.
- c. In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at Section 5, complete one of the following:
- (1) Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the two, 10, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;
 - (2) Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater

Montgomery Township Draft Stormwater Ordinance

- leaving the site for the two, 10, and 100-year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site. This analysis shall include the analysis of impacts of existing land uses and projected land uses assuming full development under existing zoning and land use ordinances in the drainage area;
- (3) Design stormwater management measures so that the post-construction peak runoff rates for the 2, 10 and 100 year storm events are 50, 75 and 80 percent, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed. The percentages shall not be applied to post-construction stormwater runoff into tidal flood hazard areas if the increased volume of stormwater runoff will not increase flood damages below the point of discharge; or
 - (4) In tidal flood hazard areas, stormwater runoff quantity analysis in accordance with (1), (2) and (3) above shall only be applied if the increased volume of stormwater runoff could increase flood damages below the point of discharge.
2. Any application for a new agricultural development that meets the definition of major development at Section 2 shall be submitted to the appropriate Soil Conservation District for review and approval in accordance with the requirements of this section and any applicable Soil Conservation District guidelines for stormwater runoff quantity and erosion control. For the purposes of this section, "agricultural development" means land uses normally associated with the production of food, fiber and livestock for sale. Such uses do not include the development of land for the processing or sale of food and the manufacturing of agriculturally related products.

G. Stormwater Runoff Quality Standards

1. Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff by 80 percent of the anticipated load from the developed site, expressed as an annual average. Stormwater management measures shall only be required for water quality control if an additional 1/4 acre of impervious surface is being proposed on a development site. The requirement to reduce TSS does not apply to any stormwater runoff in a discharge regulated under a numeric effluent limitation for TSS imposed under the New Jersey Pollution Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement. The water quality design storm is 1.25 inches of rainfall in two hours. Water quality calculations shall take into account the distribution of rain from the water quality design storm, as reflected in Table 1. The calculation of the volume of runoff may take into account the implementation of non-structural and structural stormwater management measures.

Montgomery Township Draft Stormwater Ordinance

Table 1: Water Quality Design Storm Distribution

Time (Minutes)	Cumulative Rainfall (Inches)	Time (Minutes)	Cumulative Rainfall (Inches)
0	0.0000	65	0.8917
5	0.0083	70	0.9917
10	0.0166	75	1.0500
15	0.0250	80	1.0840
20	0.0500	85	1.1170
25	0.0750	90	1.1500
30	0.1000	95	1.1750
35	0.1330	100	1.2000
40	0.1660	105	1.2250
45	0.2000	110	1.2334
50	0.2583	115	1.2417
55	0.3583	120	1.2500
60	0.6250		

2. For purposes of TSS reduction calculations, Table 2 below presents the presumed removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in Section 7, or found on the Department's website at www.njstormwater.org. The BMP Manual and other sources of technical guidance are listed in Section 7. TSS reduction shall be calculated based on the removal rates for the BMPs in Table 2 below. Alternative removal rates and methods of calculating removal rates may be used if the design engineer provides documentation demonstrating the capability of these alternative rates and methods to the review agency. A copy of any approved alternative rate or method of calculating the removal rate shall be provided to the Department at the following address: Division of Watershed Management, New Jersey Department of Environmental Protection, PO Box 418 Trenton, New Jersey, 08625-0418.

Montgomery Township Draft Stormwater Ordinance

3. If more than one BMP in series is necessary to achieve the required 80 percent TSS reduction for a site, the applicant shall utilize the following formula to calculate TSS reduction:

$$R = A + B - (AXB)/100$$

Where

R = total TSS percent load removal from application of both BMPs, and

A = the TSS percent removal rate applicable to the first BMP

B = the TSS percent removal rate applicable to the second BMP

Table 2: TSS Removal Rates for BMPs	
Best Management Practice	TSS Percent Removal Rate
Bioretention Systems	90
Constructed Stormwater Wetland	90
Extended Detention Basin	40-60
Infiltration Structure	80
Manufactured Treatment Device	See Section 6.C
Sand Filter	80
Vegetative Filter Strip	60-80
Wet Pond	50-90

4. If there is more than one onsite drainage area, the 80 percent TSS removal rate shall apply to each drainage area, unless the runoff from the subareas converge on site in which case the removal rate can be demonstrated through a calculation using a weighted average.
5. Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction nutrient load of the anticipated load from the developed site in stormwater runoff generated from the water quality design storm. In achieving reduction of nutrients to the maximum extent feasible, the design of the site shall include nonstructural strategies and structural measures that optimize nutrient removal while still achieving the performance standards in Sections 4.F and 4.G.
6. Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in Section 7.

Montgomery Township Draft Stormwater Ordinance

7. In accordance with the definition of FW1 at N.J.A.C. 7:9B-1.4, stormwater management measures shall be designed to prevent any increase in stormwater runoff to waters classified as FW1.
8. Special water resource protection areas shall be established along all waters designated Category One at N.J.A.C. 7:9B, and perennial or intermittent streams that drain into or upstream of the Category One waters as shown on the USGS Quadrangle Maps or in the County Soil Surveys, within the associated HUC14 drainage area. These areas shall be established for the protection of water quality, aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, and exceptional fisheries significance of those established Category One waters. These areas shall be designated and protected as follows:
 - a. The applicant shall preserve and maintain a special water resource protection area in accordance with one of the following:
 - (1) A 300-foot special water resource protection area shall be provided on each side of the waterway, measured perpendicular to the waterway from the top of the bank outwards or from the centerline of the waterway where the bank is not defined, consisting of existing vegetation or vegetation allowed to follow natural succession is provided. (2) Encroachment within the designated special water resource protection area under Subsection (1) above shall only be allowed where previous development or disturbance has occurred (for example, active agricultural use, parking area or maintained lawn area). The encroachment shall only be allowed where applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable. In no case shall the remaining special water resource protection area be reduced to less than 150 feet as measured perpendicular to the top of bank of the waterway or centerline of the waterway where the bank is undefined. All encroachments proposed under this subparagraph shall be subject to review and approval by the Department.
 - b. All stormwater shall be discharged outside of and flow through the special water resource protection area and shall comply with the Standard for Off-Site Stability in the "Standards For Soil Erosion and Sediment Control in New Jersey," established under the Soil Erosion and Sediment Control Act , N.J.S.A. 4:24-39 et seq.
 - c. If stormwater discharged outside of and flowing through the special water resource protection area cannot comply with the Standard For Off-Site Stability in the "Standards for Soil Erosion and Sediment Control in New Jersey," established under the Soil Erosion and Sediment Control Act , N.J.S.A. 4:24-39 et seq., then the stabilization measures in accordance with the requirements of the above standards may be placed within the special water resource protection area, provided that:
 - (1) Stabilization measures shall not be placed within 150 feet of the Category One waterway;
 - (2) Stormwater associated with discharges allowed by this section shall achieve a 95 percent TSS post-construction removal rate;
 - (3) Temperature shall be addressed to ensure no impact on the receiving waterway;

Montgomery Township Draft Stormwater Ordinance

- (4) The encroachment shall only be allowed where the applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable;
 - (5) A conceptual project design meeting shall be held with the appropriate Department staff and Soil Conservation District staff to identify necessary stabilization measures; and
 - (6) All encroachments proposed under this section shall be subject to review and approval by the Department.
- d. A stream corridor protection plan may be developed by a regional stormwater management planning committee as an element of a regional stormwater management plan, or by a municipality through an adopted municipal stormwater management plan. If a stream corridor protection plan for a waterway subject to Section 4.G(8) has been approved by the Department of Environmental Protection, then the provisions of the plan shall be the applicable special water resource protection area requirements for that waterway. A stream corridor protection plan for a waterway subject to G.8 shall maintain or enhance the current functional value and overall condition of the special water resource protection area as defined in G.8.a.(1) above. In no case shall a stream corridor protection plan allow the reduction of the Special Water Resource Protection Area to less than 150 feet as measured perpendicular to the waterway subject to this subsection.
- e. Paragraph G.8 does not apply to the construction of one individual single family dwelling that is not part of a larger development on a lot receiving preliminary or final subdivision approval on or before February 2, 2004 , provided that the construction begins on or before February 2, 2009.

Section 5: Calculation of Stormwater Runoff and Groundwater Recharge

- A. Stormwater runoff shall be calculated in accordance with the following:
1. The design engineer shall calculate runoff using one of the following methods:
 - a. The USDA Natural Resources Conservation Service (NRCS) methodology, including the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in the NRCS National Engineering Handbook Section 4 – Hydrology and Technical Release 55 – Urban Hydrology for Small Watersheds; or
 - b. The Rational Method for peak flow and the Modified Rational Method for hydrograph computations.
 2. For the purpose of calculating runoff coefficients and groundwater recharge, there is a presumption that the pre-construction condition of a site or portion thereof is a wooded land use with good hydrologic condition. The term “runoff coefficient” applies to both the NRCS methodology at Section 5.A.1.a and the Rational and Modified Rational Methods at Section 5.A.1.b. A runoff coefficient or a groundwater recharge land cover for an existing condition may be used on all or a portion of the site if the design engineer verifies that the hydrologic condition has existed on the site or portion of the site for at least five years without interruption prior to the time of application. If more than one land cover have existed on the

Montgomery Township Draft Stormwater Ordinance

site during the five years immediately prior to the time of application, the land cover with the lowest runoff potential shall be used for the computations. In addition, there is the presumption that the site is in good hydrologic condition (if the land use type is pasture, lawn, or park), with good cover (if the land use type is woods), or with good hydrologic condition and conservation treatment (if the land use type is cultivation).

3. In computing pre-construction stormwater runoff, the design engineer shall account for all significant land features and structures, such as ponds, wetlands, depressions, hedgerows, or culverts, that may reduce pre-construction stormwater runoff rates and volumes.
 4. In computing stormwater runoff from all design storms, the design engineer shall consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces separately to accurately compute the rates and volume of stormwater runoff from the site. To calculate runoff from unconnected impervious cover, urban impervious area modifications as described in the NRCS Technical Release 55 – Urban Hydrology for Small Watersheds and other methods may be employed.
 5. If the invert of the outlet structure of a stormwater management measure is below the flood hazard design flood elevation as defined at N.J.A.C. 7:13, the design engineer shall take into account the effects of tailwater in the design of structural stormwater management measures.
- B. Groundwater recharge may be calculated in accordance with the following:
0. The New Jersey Geological Survey Report GSR-32 A Method for Evaluating Ground-Water Recharge Areas in New Jersey, incorporated herein by reference as amended and supplemented. Information regarding the methodology is available from the New Jersey Stormwater Best Management Practices Manual; at <http://www.state.nj.us/dep/njgs/>; or at New Jersey Geological Survey, 29 Arctic Parkway, P.O. Box 427 Trenton, New Jersey 08625-0427; (609) 984-6587.

Section 6: Standards for Structural Stormwater Management Measures

A. Standards for structural stormwater management measures are as follows:

1. Structural stormwater management measures shall be designed to take into account the existing site conditions, including, for example, environmentally critical areas, wetlands; flood-prone areas; slopes; depth to seasonal high water table; soil type, permeability and texture; drainage area and drainage patterns; and the presence of solution-prone carbonate rocks (limestone).
2. Structural stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning. Trash racks shall be installed at the intake to the outlet structure as appropriate, and shall have parallel bars with one-inch (1") spacing between the bars to the elevation of the water quality design storm. For elevations higher than the water quality design storm, the parallel bars at the outlet structure shall be spaced no greater than one-third (1/3) the width of the diameter of the orifice or one-third (1/3) the width of the weir, with a minimum spacing between bars of one-inch and a maximum spacing between bars of six inches. In addition, the design of trash racks must comply with the requirements of Section 8.D.

Montgomery Township Draft Stormwater Ordinance

3. Structural stormwater management measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant. Measures that are consistent with the relevant portions of the Residential Site Improvement Standards at N.J.A.C. 5:21-7.3, 7.4, and 7.5 shall be deemed to meet this requirement.
 4. At the intake to the outlet from the stormwater management basin, the orifice size shall be a minimum of two and one-half inches in diameter.
 5. Stormwater management basins shall be designed to meet the minimum safety standards for stormwater management basins at Section 8.
- B. Stormwater management measure guidelines are available in the New Jersey Stormwater Best Management Practices Manual. Other stormwater management measures may be utilized provided the design engineer demonstrates that the proposed measure and its design will accomplish the required water quantity, groundwater recharge and water quality design and performance standards established by Section 4 of this ordinance.
- C. Manufactured treatment devices may be used to meet the requirements of Section 4 of this ordinance, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology and certified by the Department.

Section 7: Sources for Technical Guidance

- A. Technical guidance for stormwater management measures can be found in the documents listed at 1 and 2 below, which are available from Maps and Publications, New Jersey Department of Environmental Protection, 428 East State Street, P.O. Box 420, Trenton, New Jersey, 08625; telephone (609) 777-1038.
1. Guidelines for stormwater management measures are contained in the New Jersey Stormwater Best Management Practices Manual, as amended. Information is provided on stormwater management measures such as: bioretention systems, constructed stormwater wetlands, dry wells, extended detention basins, infiltration structures, manufactured treatment devices, pervious paving, sand filters, vegetative filter strips, and wet ponds.
 2. The New Jersey Department of Environmental Protection Stormwater Management Facilities Maintenance Manual, as amended.
- B. Additional technical guidance for stormwater management measures can be obtained from the following:
1. The "Standards for Soil Erosion and Sediment Control in New Jersey" promulgated by the State Soil Conservation Committee and incorporated into N.J.A.C. 2:90. Copies of these standards may be obtained by contacting the State Soil Conservation Committee or any of the Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a)4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey 08625; (609) 292-5540;
 2. The Rutgers Cooperative Extension Service, 732-932-9306; and

Montgomery Township Draft Stormwater Ordinance

3. The Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a)4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey, 08625, (609) 292-5540.

Section 8: Safety Standards for Stormwater Management Basins

- A. This section sets forth requirements to protect public safety through the proper design and operation of stormwater management basins. This section applies to any new stormwater management basin.
- B. Requirements for Trash Racks, Overflow Grates and Escape Provisions
 1. A trash rack is a device designed to catch trash and debris and prevent the clogging of outlet structures. Trash racks shall be installed at the intake to the outlet from the stormwater management basin to ensure proper functioning of the basin outlets in accordance with the following:
 - a. The trash rack shall have parallel bars, with no greater than six inch spacing between the bars.
 - b. The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure.
 - c. The average velocity of flow through a clean trash rack is not to exceed 2.5 feet per second under the full range of stage and discharge. Velocity is to be computed on the basis of the net area of opening through the rack.
 - d. The trash rack shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 lbs/ft sq.
 2. An overflow grate is designed to prevent obstruction of the overflow structure. If an outlet structure has an overflow grate, such grate shall meet the following requirements:
 - a. The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance.
 - b. The overflow grate spacing shall be no less than two inches across the smallest dimension.
 - c. The overflow grate shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 lbs./ft sq.
 3. For purposes of this paragraph 3, escape provisions means the permanent installation of ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management basins. Stormwater management basins shall include escape provisions as follows:
 - a. If a stormwater management basin has an outlet structure, escape provisions shall be incorporated in or on the structure. With the prior approval of the reviewing agency identified in Section 8.C a free-standing outlet structure may be exempted from this requirement.

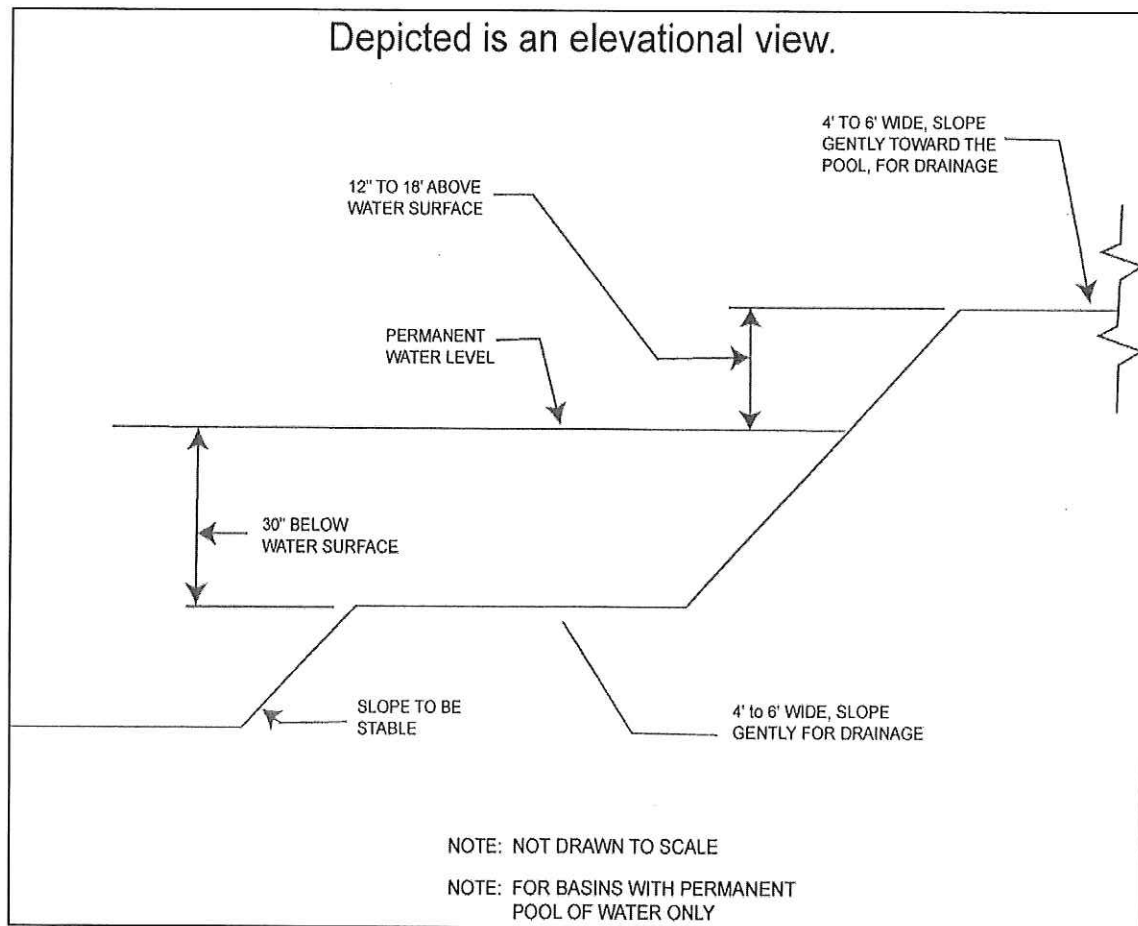
Montgomery Township Draft Stormwater Ordinance

- b. Safety ledges shall be constructed on the slopes of all new stormwater management basins having a permanent pool of water deeper than two and one-half feet. Such safety ledges shall be comprised of two steps. Each step shall be four to six feet in width. One step shall be located approximately two and one-half feet below the permanent water surface, and the second step shall be located one to one and one-half feet above the permanent water surface. See Section 8.D for an illustration of safety ledges in a stormwater management basin.
- c. In new stormwater management basins, the maximum interior slope for an earthen dam, embankment, or berm shall not be steeper than 3 horizontal to 1 vertical.

C. Variance or Exemption from Safety Standards

1. A variance or exemption from the safety standards for stormwater management basins may be granted only upon a written finding by the appropriate reviewing agency (municipality, county or Department) that the variance or exemption will not constitute a threat to public safety.

D. Illustration of Safety Ledges in a New Stormwater Management Basin



Montgomery Township Draft Stormwater Ordinance

Section 9: Requirements for a Site Development Stormwater Plan

A. Submission of Site Development Stormwater Plan

1. Whenever an applicant seeks municipal approval of a development subject to this ordinance, the applicant shall submit all of the required components of the Checklist for the Site Development Stormwater Plan at Section 9.C below as part of the submission of the applicant's application for subdivision or site plan approval.
2. The applicant shall demonstrate that the project meets the standards set forth in this ordinance.
3. The applicant shall submit 15 copies of the materials listed in the checklist for site development stormwater plans in accordance with Section 9.C of this ordinance.

B. Site Development Stormwater Plan Approval

The applicant's Site Development project shall be reviewed as a part of the subdivision or site plan review process by the municipal board or official from which municipal approval is sought. That municipal board or official shall consult the engineer retained by the Planning and/or Zoning Board (as appropriate) to determine if all of the checklist requirements have been satisfied and to determine if the project meets the standards set forth in this ordinance.

C. Checklist Requirements

The following information shall be required:

1. Topographic Base Map

The reviewing engineer may require upstream tributary drainage system information as necessary. It is recommended that the topographic base map of the site be submitted which extends a minimum of 200 feet beyond the limits of the proposed development, at a scale of 1"=200' or greater, showing 2-foot contour intervals. The map as appropriate may indicate the following: existing surface water drainage, shorelines, steep slopes, soils, erodible soils, perennial or intermittent streams that drain into or upstream of the Category One waters, wetlands and flood plains along with their appropriate buffer strips, marshlands and other wetlands, pervious or vegetative surfaces, existing man-made structures, roads, bearing and distances of property lines, and significant natural and manmade features not otherwise shown.

2. Environmental Site Analysis

A written and graphic description of the natural and man-made features of the site and its environs. This description should include a discussion of soil conditions, slopes, wetlands, waterways and vegetation on the site. Particular attention should be given to unique, unusual, or environmentally sensitive features and to those that provide particular opportunities or constraints for development.

3. Project Description and Site Plan(s)

A map (or maps) at the scale of the topographical base map indicating the location of existing and proposed buildings, roads, parking areas, utilities, structural facilities for stormwater

Montgomery Township Draft Stormwater Ordinance

management and sediment control, and other permanent structures. The map(s) shall also clearly show areas where alterations occur in the natural terrain and cover, including lawns and other landscaping, and seasonal high ground water elevations. A written description of the site plan and justification of proposed changes in natural conditions may also be provided.

4. Land Use Planning and Source Control Plan

This plan shall provide a demonstration of how the goals and standards of Sections 3 through 6 are being met. The focus of this plan shall be to describe how the site is being developed to meet the objective of controlling groundwater recharge, stormwater quality and stormwater quantity problems at the source by land management and source controls whenever possible.

5. Stormwater Management Facilities Map

The following information, illustrated on a map of the same scale as the topographic base map, shall be included:

- a. Total area to be paved or built upon, proposed surface contours, land area to be occupied by the stormwater management facilities and the type of vegetation thereon, and details of the proposed plan to control and dispose of stormwater.
- b. Details of all stormwater management facility designs, during and after construction, including discharge provisions, discharge capacity for each outlet at different levels of detention and emergency spillway provisions with maximum discharge capacity of each spillway.

6. Calculations

- a. Comprehensive hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in Section 4 of this ordinance.
- b. When the proposed stormwater management control measures (e.g., infiltration basins) depends on the hydrologic properties of soils, then a soils report shall be submitted. The soils report shall be based on onsite boring logs or soil pit profiles. The number and location of required soil borings or soil pits shall be determined based on what is needed to determine the suitability and distribution of soils present at the location of the control measure.

7. Maintenance and Repair Plan

The design and planning of the stormwater management facility shall meet the maintenance requirements of Section 10.

8. Waiver from Submission Requirements

The municipal official or board reviewing an application under this ordinance may, in consultation with the municipal engineer, waive submission of any of the requirements in Sections 9.C.1 through 9.C.6 of this ordinance when it can be demonstrated that the information requested is impossible to obtain or it would create a hardship on the applicant to obtain and its absence will not materially affect the review process.

Montgomery Township Draft Stormwater Ordinance

Section 10: Maintenance and Repair

A. Applicability

1. Projects subject to review as in Section 1.C of this ordinance shall comply with the requirements of Sections 10.B and 10.C.

B. General Maintenance

1. The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development.
2. The maintenance plan shall contain specific preventative maintenance tasks and schedules; cost estimates, including estimated cost of sediment, debris, or trash removal; and the name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement). Maintenance guidelines for stormwater management measures are available in the New Jersey Stormwater Best Management Practices Manual. If the maintenance plan identifies a person other than the developer (for example, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or of the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.
3. Responsibility for maintenance shall not be assigned or transferred to the owner or tenant of an individual property in a residential development or project, unless such owner or tenant owns or leases the entire residential development or project.
4. If the person responsible for maintenance identified under Section 10.B.2 above is not a public agency, the maintenance plan and any future revisions based on Section 10.B.7 below shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.
5. Preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure, including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of nonvegetated linings.
6. The person responsible for maintenance identified under Section 10.B.2 above shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.
7. The person responsible for maintenance identified under Section 10.B.2 above shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.
8. The person responsible for maintenance identified under Section 10.B.2 above shall retain and make available, upon request by any public entity with administrative, health, environmental, or safety authority over the site, the maintenance plan and the documentation required by Sections 10.B.6 and 10.B.7 above.

Montgomery Township Draft Stormwater Ordinance

9. The requirements of Sections 10.B.3 and 10.B.4 do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency.
 10. In the event that the stormwater management facility becomes a danger to public safety or public health, or if it is in need of maintenance or repair, the municipality shall so notify the responsible person in writing. Upon receipt of that notice, the responsible person shall have fourteen (14) days to effect maintenance and repair of the facility in a manner that is approved by the municipal engineer or his designee. The municipality, in its discretion, may extend the time allowed for effecting maintenance and repair for good cause. If the responsible person fails or refuses to perform such maintenance and repair, the municipality or County may immediately proceed to do so and shall bill the cost thereof to the responsible person.
- B. Nothing in this section shall preclude the municipality in which the major development is located from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53.

Section 11: Penalties

Any person who erects, constructs, alters, repairs, converts, maintains, or uses any building, structure or land in violation of this ordinance shall be subject to the following penalties: *[Montgomery to Specify]*.

Section 12: Effective Date

This ordinance shall take effect immediately upon the approval by the county review agency, or sixty (60) days from the receipt of the ordinance by the county review agency if the county review agency should fail to act.

Section 13: Severability

If the provisions of any section, subsection, paragraph, subdivision, or clause of this ordinance shall be judged invalid by a court of competent jurisdiction, such order of judgment shall not affect or invalidate the remainder of any section, subsection, paragraph, subdivision, or clause of this ordinance.

ATTACHMENT 2

NJAC 7:8
SUBCHAPTER 4

Municipal Stormwater Management Planning

THIS IS A COURTESY COPY OF THIS RULE ADOPTION. THE OFFICIAL VERSION WILL BE PUBLISHED IN THE FEBRUARY 2, 2004 NEW JERSEY REGISTER. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THIS TEXT AND THE OFFICIAL VERSION OF THE ADOPTION, THE OFFICIAL VERSION WILL GOVERN.

3. In accordance with the Residential Site Improvement Standards at N.J.A.C. 5:21-7, if a stormwater management plan for the region has been approved by the Department, stormwater management systems must conform with that plan.

4. The Department shall not issue a permit for a project or activity that conflicts with an Areawide Water Quality Management Plan pursuant to N.J.A.C. 7:15-3.1.

SUBCHAPTER 4. MUNICIPAL STORMWATER MANAGEMENT PLANNING

7:8-4.1 Scope

This subchapter describes stormwater management planning and implementation at the municipal level, including plan elements, county review and technical assistance, the schedule for adoption of the plan and ordinances, and variance or exemption from design and performance standards for stormwater management measures.

7:8-4.2 Municipal stormwater management plan and elements

(a) A municipal stormwater management plan shall address stormwater-related water quality, groundwater recharge and water quantity impacts of major development, and may also address stormwater-related water quality, water quantity and groundwater recharge impacts of existing land uses. For purposes of this subchapter, major development is limited to projects that ultimately disturb one or more acres of land.

(b) A municipal stormwater management plan and stormwater control ordinance(s) shall conform with applicable regional stormwater management plan(s).

(c) A municipal stormwater management plan shall, at a minimum:

1. Describe how the municipal stormwater management plan will achieve the goals of stormwater management planning set forth at N.J.A.C. 7:8-2.3;

2. Include maps showing water bodies based on Soil Surveys published by the U.S. Department of Agriculture; the U.S. Geological Survey Topographic Map, 7.5 minute quadrangle series; or other sources of information depicting water bodies in similar or greater detail;

3. Map groundwater recharge areas and well head protection areas based on maps prepared by the Department under N.J.S.A. 58:11A-13 or a municipal ordinance;

4. Describe how the municipal stormwater management plan incorporates design and performance standards in N.J.A.C.7: 8-5 or alternative design and performance standards adopted as a part of a regional stormwater management plan or water quality management plan;

THIS IS A COURTESY COPY OF THIS RULE ADOPTION. THE OFFICIAL VERSION WILL BE PUBLISHED IN THE FEBRUARY 2, 2004 NEW JERSEY REGISTER. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THIS TEXT AND THE OFFICIAL VERSION OF THE ADOPTION, THE OFFICIAL VERSION WILL GOVERN.

5. Describe how adequate long-term operation as well as preventative and corrective maintenance (including replacement) of the selected stormwater management measures will be ensured;
6. Describe how the plan will ensure compliance with Safety Standards for Stormwater Management Basins at N.J.A.C. 7:8-6;
7. Describe how the municipal stormwater management plan is coordinated with the appropriate Soil Conservation District and any other stormwater management plans, including any adopted regional stormwater management plan, prepared by any stormwater management planning agency related to the river basins or drainage areas to which the plans and/or ordinances apply;
8. Evaluate the extent to which the municipality's entire master plan (including the land use plan element), official map and development regulations (including the zoning ordinance) implement the principles expressed in N.J.A.C. 7:8-5.3(b). This evaluation shall also be included (with updating as appropriate) in the reexamination report adopted under N.J.S.A. 40:55D-89;
9. Include a map of the municipality showing:
 - i. Projected land uses assuming full development under existing zoning, and
 - ii. The hydrologic unit code 14 (HUC14) drainage areas as defined by the United States Geological Survey; and an estimate, for each HUC14 drainage area, of the total acreage in the municipality of impervious surface and associated future nonpoint source pollutant load assuming full build out of the projected land uses.
10. At the option of the municipality, document that it has a combined total of less than one square mile of vacant or agricultural lands rather than provide the information required in (c)8 and 9 above. Agricultural lands may be excluded if the development rights to these lands have been permanently purchased or restricted by covenant, easement or deed. Vacant or agricultural lands in environmentally constrained areas may be excluded if the documentation also includes an overlay map of these areas at the same scale as the map under (c)10i below.
 - i. Documentation shall include an existing land use map at an appropriate scale to display the land uses of each parcel within the municipality. Such a map shall display the following land uses: residential (which may be divided into single family, two-to-four family, and other multi-family), commercial, industrial, agricultural, parkland, other public uses, semipublic uses, and vacant land;

THIS IS A COURTESY COPY OF THIS RULE ADOPTION. THE OFFICIAL VERSION WILL BE PUBLISHED IN THE FEBRUARY 2, 2004 NEW JERSEY REGISTER. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THIS TEXT AND THE OFFICIAL VERSION OF THE ADOPTION, THE OFFICIAL VERSION WILL GOVERN.

11. In order to grant a variance or exemption from the design and performance standards in N.J.A.C. 7:8-5, include a mitigation plan that identifies what measures are necessary to offset the deficit created by granting the variance or exemption. The mitigation plan shall ensure that mitigation is completed within the drainage area and for the performance standard for which the variance or exemption was granted;

12. Include a copy of the recommended implementing stormwater control ordinance(s) requiring stormwater management measures, and

13. The municipal stormwater management plan may also include a stream corridor protection plan to address protection of areas adjacent to waterbodies. For waterbodies subject to N.J.A.C. 7:8-5.5(h), the plan shall provide, at a minimum, protections equivalent to those provided at N.J.A.C. 7:8-5.5(h) and be approved by the Department.

7:8-4.3 Schedule for adoption of municipal stormwater management plan and ordinances

(a) A municipality shall adopt a municipal stormwater management plan as an integral part of its master plan and official map in accordance with the schedule in (a)1 or 2 below, whichever is sooner. The requirements in N.J.A.C. 7:8-4.2(c)8 and 9 are not operative until February 2, 2006.

1. By the deadline established in a New Jersey Pollutant Discharge Elimination System permit obtained by the municipality for a municipal separate storm sewer system under N.J.A.C. 7:14A; or

2. By the next reexamination of the master plan under N.J.S.A. 40:55D-89, if a grant for 90 percent of the costs for the preparation of the municipal stormwater management plan has been made available to a municipality by the Department;

(b) Within one year after the municipality adopts the municipal stormwater management plan, the municipality shall adopt stormwater control ordinance(s) to implement the adopted plan and shall submit the adopted municipal stormwater management plan and ordinance(s) to the county review agency for approval. The adopted municipal stormwater management plan and ordinance(s) shall not take effect without approval by the county review agency.

(c) The municipality shall amend the municipal stormwater management plan and stormwater control ordinance(s) as necessary and submit the amended plan and amended ordinance(s) to the county review agency for approval.

(d) The municipality shall reexamine the municipal stormwater management plan at each reexamination of the municipality's master plan in accordance with N.J.S.A. 40:55D-89.

THIS IS A COURTESY COPY OF THIS RULE ADOPTION. THE OFFICIAL VERSION WILL BE PUBLISHED IN THE FEBRUARY 2, 2004 NEW JERSEY REGISTER. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THIS TEXT AND THE OFFICIAL VERSION OF THE ADOPTION, THE OFFICIAL VERSION WILL GOVERN.

(e) Within one year of the adoption of a regional stormwater management plan as an amendment to the Areawide Water Quality Management Plan, or an amendment thereto, each municipality within the regional stormwater management planning area shall amend their respective municipal stormwater management plans and stormwater control ordinance(s) to implement the regional stormwater management plan.

7:8-4.4 County review process

(a) A municipality shall submit a copy of the adopted stormwater management plan and stormwater control ordinance(s) to the county review agency and the Department.

(b) In reviewing the adopted municipal stormwater management plan and ordinance(s), the county review agency shall consider whether the plan and ordinance(s) conform with the requirements of this chapter.

(c) In accordance with N.J.S.A. 40:55D-97, it is the county review agency's responsibility to review and approve, conditionally approve (specifying the necessary amendments to the plan and ordinance(s)) or disapprove the adopted municipal stormwater management plan and ordinance(s) within 60 calendar days of receipt of the plan and ordinance(s). If the county review agency does not approve, conditionally approve, or disapprove the plan or ordinance(s) within 60 calendar days, the plan and ordinance(s) shall be deemed approved. The county review agency shall issue a written decision to the municipality, with a copy to the Department.

(d) A municipal stormwater management plan and ordinance(s) approved under (c) above shall take effect immediately. A municipal stormwater management plan and ordinance(s) conditionally approved under (c) above shall take effect upon adoption by the municipality of the amendments specified by the county review agency.

(e) Within 30 days of the effective date of the municipal stormwater management plan and ordinance(s) under (d) above, the municipality shall place the plan and ordinance(s) on its website and notify the Department, the Soil Conservation District and State Soil Conservation Committee, or:

1. Submit a copy of the approved municipal stormwater management plan and ordinance(s) to the Department; and
2. Provide notice of such approval to the Soil Conservation District and the State Soil Conservation Committee and, upon request, submit a copy of the approved plan and ordinance(s).

7:8-4.5 Reservation of rights

THIS IS A COURTESY COPY OF THIS RULE ADOPTION. THE OFFICIAL VERSION WILL BE PUBLISHED IN THE FEBRUARY 2, 2004 NEW JERSEY REGISTER. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THIS TEXT AND THE OFFICIAL VERSION OF THE ADOPTION, THE OFFICIAL VERSION WILL GOVERN.

The Department reserves the right to review stormwater management plans and ordinances for compliance with this subchapter and make recommendations to correct any deficiencies.

7:8-4.6 Variance or exemption from the design and performance standards for stormwater management measures

A municipality may grant a variance or exemption from the design and performance standards for stormwater management measures set forth in its approved municipal stormwater management plan and stormwater control ordinance(s), provided the municipal plan includes a mitigation plan in accordance with N.J.A.C. 7:8-4.2(c)11 and the municipality submits a written report to the county review agency and the Department describing the variance or exemption and the required mitigation.

SUBCHAPTER 5 DESIGN AND PERFORMANCE STANDARDS FOR STORMWATER MANAGEMENT MEASURES

7:8-5.1 Scope

- (a) This subchapter establishes design and performance standards for stormwater management measures for major development intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies.
- (b) The standards specified in this subchapter do not apply to major development if alternative design and performance standards that are at least as protective as would be achieved through this subchapter when considered on a regional stormwater management area basis are applicable under a regional stormwater management plan adopted in accordance with this chapter or a water quality management plan adopted in accordance with N.J.A.C. 7:15.

7:8-5.2 Stormwater management measures for major development

- (a) Stormwater management measures for major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards at N.J.A.C. 7:8-5.4 and 5.5. To the maximum extent practicable, these standards shall be met by incorporating nonstructural stormwater management strategies at N.J.A.C. 7:8-5.3 into the design. If these measures alone are not sufficient to meet these standards, structural stormwater management measures at N.J.A.C. 7:8-5.7 necessary to meet these standards shall be incorporated into the design.
- (b) The development shall incorporate a maintenance plan under N.J.A.C. 7:8-5.8 for the stormwater management measures.

ATTACHMENT 3

New Jersey's Integrated List of Waterbodies, Sublist 1-5

Raritan Watershed Region 10
New Jersey's Integrated List of Waterbodies

Sublist	Wtrshd Region	WMA	Station Name/Waterbody	Site ID	Parameters	Data Source
3	Raritan	10	Amwell Lake-10	Amwell Lake	Phosphorus	NJDEP Clean Lakes
3	Raritan	10	Back Brook at Rt 206 in Montgomery	AN0404	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Bear Brook at Stobbe Ln in West Windsor	AN0384	Unknown Toxicity	NJDEP AMNET
1	Raritan	10	Bear Brook at Stobbe Ln in West Windsor	AN0384	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Beden Brook at Great Rd in Blawenburg	AN0401B	Benthic Macroinvertebrates	NJDEP AMNET
3	Raritan	10	Beden Brook on Aunt Molly Rd (abv STP) in Hopewell	10-BED-1	Copper, Lead, Mercury, Nickel, Selenium, Zinc	NJDEP/USGS Data, Metal Recon
5	Raritan	10	Bedens Brook at Aunt Molly Rd (abv STP) in Hopewell	AN0398	Benthic Macroinvertebrates	NJDEP AMNET, Metal Recon
5	Raritan	10	Bedens Brook at Rt 206 in Montgomery	AN0401	Benthic Macroinvertebrates	NJDEP AMNET
4	Raritan	10	Bedens Brook near Rocky Hill	01401600, 10-BED-2, 10-BED-3	Fecal Coliform	NJDEP/USGS Data, EWQ, Metal Recon
5	Raritan	10	Bedens Brook near Rocky Hill	01401600, 10-BED-2, 10-BED-3	Phosphorus, Arsenic, Lead	NJDEP/USGS Data, EWQ, Metal Recon
3	Raritan	10	Bedens Brook near Rocky Hill	01401600, 10-BED-2, 10-BED-3	Cadmium, Mercury	NJDEP/USGS Data, EWQ, Metal Recon
1	Raritan	10	Bedens Brook near Rocky Hill	01401600, 10-BED-2, 10-BED-3	Temperature, pH, Dissolved Oxygen, Nitrate, Dissolved Solids, Total Suspended Solids, Unionized Ammonia, Chromium, Copper, Nickel, Selenium, Zinc	NJDEP/USGS Data, EWQ, Metal Recon
3	Raritan	10	Bently Brook at Prodelin Way in Millstone	MB-CA, MB-CB	Benthic Macroinvertebrates	Monmouth Co HD
5	Raritan	10	Big Bear Brook at Old Trenton Rd (Rt 535) in West Windsor	AN0383	Benthic Macroinvertebrates, Unknown Toxicity	NJDEP AMNET
1	Raritan	10	Brainerd Lake-10	Brainerd Lake	Fish Community	NJDEP Freshwater Fisheries
3	Raritan	10	Brainerd Lake-10	Brainerd Lake	Phosphorus	NJDEP Clean Lakes
3	Raritan	10	Camp Harmony Branch of Stony Brook at Van Dyke Rd in Hopewell	AN0390	Benthic Macroinvertebrates	NJDEP AMNET
3	Raritan	10	Carnegie Lake-10	Carnegie Lake	Phosphorus	NJDEP Clean Lakes, NJDEP Fish Tissue Monitoring
5	Raritan	10	Carnegie Lake-10	Carnegie Lake	Fish-Mercury	NJDEP Clean Lakes, NJDEP Fish Tissue Monitoring
4	Raritan	10	Cranbury Book near Prospect Plains	01400690	Fecal Coliform	NJDEP/USGS Data, EWQ
5	Raritan	10	Cranbury Book near Prospect Plains	01400690	pH	NJDEP/USGS Data, EWQ
1	Raritan	10	Cranbury Book near Prospect Plains	01400690	Phosphorus, Temperature, Dissolved Oxygen, Nitrate, Dissolved Solids, Total Suspended Solids, Unionized Ammonia	NJDEP/USGS Data, EWQ
5	Raritan	10	Cranbury Brook at Applegarth Rd in Monearoe	AN0385	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Cranbury Brook at Edgemere Ave in Plainsboro	AN0386	Benthic Macroinvertebrates	NJDEP AMNET
3	Raritan	10	Cruser Brook at Rt 206 in Montgomery	AN0403	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Devils Brook at New Rd in South Brunswick	AN0387	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Devils Brook at Schalk's Rd in Plainsboro	AN0389	Benthic Macroinvertebrates	NJDEP AMNET

Raritan Watershed Region 10
New Jersey's Integrated List of Waterbodies

Sublist	Wtrshd Region	WMA	Station Name/Waterbody	Site ID	Parameters	Data Source
4	Raritan	10	Duck Pond Run at Clarksville	01401200	Fecal Coliform	Monmouth Co HD, NJDEP/USGS Data
3	Raritan	10	Duck Pond Run at Clarksville	01401200	Oxygen, Dissolved Solids, Total Suspended Solids, Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Zinc	Monmouth Co HD, NJDEP/USGS Data
1	Raritan	10	Duck Pond Run at Clarksville	01401200	Temperature, Nitrate, Unionized Ammonia	Monmouth Co HD, NJDEP/USGS Data
3	Raritan	10	Duck Pond Run at Rt 1 in West Windsor	AN0394	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Etra Lake-10	Etra Lake	Phosphorus	NJDEP Clean Lakes
5	Raritan	10	Grove Mill Pond-10	Grovers Mill Pond	Fish-Mercury	NJDEP Fish Tissue Monitoring
1	Raritan	10	Heathcote Brook at Academy St in South Brunswick	AN0396	Benthic Macroinvertebrates	NJDEP AMNET
4	Raritan	10	Heathcote Brook at Kingston	01401400, 10-MIL-2	Fecal Coliform	NJDEP/USGS Data
1	Raritan	10	Heathcote Brook at Kingston	01401400, 10-MIL-2	Phosphorus, Temperature, pH, Dissolved Oxygen, Nitrate, Dissolved Solids, Total Suspended Solids, Unionized Ammonia	NJDEP/USGS Data
3	Raritan	10	Heathcote Brook at Stouts Ln in South Brunswick	AN0395	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Millstone River above Raritan River conf in Franklin	AN0414	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Millstone River at Applegarth Rd in Monearoe	AN0382D	Benthic Macroinvertebrates	NJDEP AMNET
3	Raritan	10	Millstone River at Backbone Hill Rd in Millstone	MB-MILL5, MB-MILL4	Benthic Macroinvertebrates	Monmouth Co HD
4	Raritan	10	Millstone River at Blackwells Mills	01402000, 10-MIL-5, 10-MIL-6	Fecal Coliform	NJDEP/USGS Data, Metal Recon
5	Raritan	10	Millstone River at Blackwells Mills	01402000, 10-MIL-5, 10-MIL-6	Phosphorus, Arsenic	NJDEP/USGS Data, Metal Recon
3	Raritan	10	Millstone River at Blackwells Mills	01402000, 10-MIL-5, 10-MIL-6	Cadmium, Mercury	NJDEP/USGS Data, Metal Recon
1	Raritan	10	Millstone River at Blackwells Mills	01402000, 10-MIL-5, 10-MIL-6	Temperature, pH, Dissolved Oxygen, Nitrate, Dissolved Solids, Total Suspended Solids, Unionized Ammonia, Chromium, Copper, Lead, Nickel, Selenium, Zinc	NJDEP/USGS Data, Metal Recon
5	Raritan	10	Millstone River at Blackwells Mills Rd in Hillsborough	AN0410	Benthic Macroinvertebrates	NJDEP AMNET
1	Raritan	10	Millstone River at Corner of Rt 33 & Millstone Rd in Millstone	MB-MILL1	Benthic Macroinvertebrates	Monmouth Co HD
3	Raritan	10	Millstone River at Grovers Mill	01400650	Cadmium, Lead, Mercury	NJDEP/USGS Data
5	Raritan	10	Millstone River at Grovers Mills Rd in Plainsboro	AN0382	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Millstone River at Kingston	01401440, 10-MIL-2	Phosphorus, Fecal Coliform, pH, Temperature, Arsenic, Mercury	NJDEP/USGS Data, Metal Recon

Raritan Watershed Region 10
New Jersey's Integrated List of Waterbodies

Sublist	Wtrshd Region	WMA	Station Name/Waterbody	Site ID	Parameters	Data Source
3	Raritan	10	Millstone River at Kingston	01401440, 10-MIL-2	Cadmium, Lead	NJDEP/USGS Data, Metal Recon
1	Raritan	10	Millstone River at Kingston	01401440, 10-MIL-2	Chromium, Copper, Nickel, Selenium, Zinc	NJDEP/USGS Data, Metal Recon
3	Raritan	10	Millstone River at Nolan Dr in Millstone	MB-MILL3	Benthic Macroinvertebrates	Monmouth Co HD
3	Raritan	10	Millstone River at off Rt 27 in Princeton	AN0397	Benthic Macroinvertebrates	NJDEP AMNET
1	Raritan	10	Millstone River at Roberts Rd in Millstone	MB-MILL6	Benthic Macroinvertebrates	Monmouth Co HD
3	Raritan	10	Millstone River at Roberts Rd in Millstone	MB-MILL6	Benthic Macroinvertebrates	Monmouth Co HD
5	Raritan	10	Millstone River at Rt 33 in Millstone	AN0379, AN0378, MB-MILL2	Benthic Macroinvertebrates	NJDEP AMNET, Monmouth Co HD
5	Raritan	10	Millstone River at Rt 535 in East Windsor	AN0382B	Benthic Macroinvertebrates	NJDEP AMNET
4	Raritan	10	Millstone River at Weston	01402540, 10-MIL-3	Fecal Coliform	NJDEP/USGS Data, Metal Recon
5	Raritan	10	Millstone River at Weston	01402540, 10-MIL-3	Phosphorus, pH, Arsenic	NJDEP/USGS Data, Metal Recon
3	Raritan	10	Millstone River at Weston	01402540, 10-MIL-3	Cadmium, Mercury	NJDEP/USGS Data, Metal Recon
1	Raritan	10	Millstone River at Weston	01402540, 10-MIL-3	Chromium, Copper, Lead, Nickel, Selenium, Zinc	NJDEP/USGS Data, Metal Recon
1	Raritan	10	Millstone River near Grovers Mill	01400640, 01400650	Temperature, pH, Dissolved Oxygen, Nitrate, Dissolved Solids, Total Suspended Solids, Unionized Ammonia, Chromium, Copper, Lead, Nickel, Selenium, Zinc	NJDEP/USGS Data, Metal Recon
4	Raritan	10	Millstone River near Grovers Mills	01400640, 01400650	Fecal Coliform	NJDEP/USGS Data, Metal Recon
5	Raritan	10	Millstone River near Grovers Mills	01400640, 01400650	Phosphorus, Arsenic	NJDEP/USGS Data, Metal Recon
3	Raritan	10	Millstone River near Grovers Mills	01400640, 01400650	Cadmium, Mercury	NJDEP/USGS Data, Metal Recon
4	Raritan	10	Millstone River near Manalapan	01400540, 01400530, 5, 10-MIL-1	Fecal Coliform	NJDEP/USGS Data, Monmouth Co HD, Metal Recon
5	Raritan	10	Millstone River near Manalapan	01400540, 01400530, 5, 10-MIL-1	Phosphorus, pH, Total Suspended Solids, Arsenic	NJDEP/USGS Data, Monmouth Co HD, Metal Recon
3	Raritan	10	Millstone River near Manalapan	01400540, 01400530, 5, 10-MIL-1	Cadmium, Mercury	NJDEP/USGS Data, Monmouth Co HD, Metal Recon
1	Raritan	10	Millstone River near Manalapan	01400540, 01400530, 5, 10-MIL-1	Nitrate, Dissolved Solids, Unionized Ammonia, Chromium, Copper, Lead, Nickel, Selenium, Zinc	NJDEP/USGS Data, Monmouth Co HD, Metal Recon
1	Raritan	10	Millstone River off Rt 1 in Plainsboro	10-MIL-7	Cadmium, Chromium, Copper, Nickel, Selenium, Zinc	NJDEP Metal Recon
5	Raritan	10	Millstone River off Rte 1 in Plainsboro	10-MIL-7	Arsenic	NJDEP Metal Recon
1	Raritan	10	Peddle Lake-10	Peddle Lake	Fish Community	NJDEP Freshwater Fisheries
3	Raritan	10	Pike Run at Rt 206 in Hillsborough	AN0402	Benthic Macroinvertebrates	NJDEP AMNET

Raritan Watershed Region 10
New Jersey's Integrated List of Waterbodies

Sublist	Wtrshd Region	WMA	Station Name/Waterbody	Site ID	Parameters	Data Source
5	Raritan	10	Pike Run at Rt 533 in Montgomery	AN0405	Benthic Macroinvertebrates	NJDEP AMNET
4	Raritan	10	Pike Run near Rocky Hill	01401700	Fecal Coliform	NJDEP/USGS Data
5	Raritan	10	Pike Run near Rocky Hill	01401700	Phosphorus	NJDEP/USGS Data
1	Raritan	10	Pike Run near Rocky Hill	01401700	Temperature, pH, Dissolved Oxygen, Nitrate, Total Suspended Solids, Unionized Ammonia	NJDEP/USGS Data
3	Raritan	10	Pike Run near Rocky Hill	01401700	Dissolved Solids	NJDEP/USGS Data
5	Raritan	10	Rock Brook at Burnt Hill Rd in Montgomery	AN0400, 10-RO-1	Benthic Macroinvertebrates	NJDEP AMNET, Metal Recon
3	Raritan	10	Rock Brook at Long Hill Rd in Montgomery	AN0399	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Rock Brook at Zion	01401560	Fecal Coliform	NJDEP/USGS Data
1	Raritan	10	Rock Brook at Zion	01401560	Phosphorus, Temperature, Dissolved Oxygen, pH, Nitrate, Dissolved Solids, Total Suspended Solids, Unionized Ammonia	NJDEP/USGS Data
3	Raritan	10	Rock Brook on Burnt Hill Rd in Montgomery	10-RO-1	Copper, Lead, Mercury, Nickel, Selenium, Zinc	NJDEP Metal Recon
1	Raritan	10	Rocky Brook at Bitner Rd in Millstone	MB-PARK5	Benthic Macroinvertebrates	Monmouth Co HD
1	Raritan	10	Rocky Brook at Perrineville	01400585	Temperature, pH, Dissolved Oxygen, Nitrate, Dissolved Solids, Total Suspended Solids, Unionized Ammonia	NJDEP/USGS Data, 304(l)
5	Raritan	10	Rocky Brook at Perrineville	01400585	Arsenic, Chromium, Lead, Zinc	NJDEP/USGS Data, 304(l)
3	Raritan	10	Rocky Brook at Perrineville	01400585	Cadmium, Copper, Mercury, Nickel, Selenium, Silver	NJDEP/USGS Data, 304(l)
3	Raritan	10	Rocky Brook at Perrineville Rd in Millstone	AN0380, MB-70	Benthic Macroinvertebrates	NJDEP AMNET, Monmouth Co HD
5	Raritan	10	Rocky Brook at Rt 33 in Hightstown	AN0381	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Rocky Brook on Rte 130 in Hightstown	10-ROC-2	Chromium, Lead, Zinc	NJDEP Metal Recon
3	Raritan	10	Rocky Brook on Rte 130 in Hightstown	10-ROC-2	Arsenic, Cadmium, Copper, Mercury, Nickel, Selenium	NJDEP Metal Recon
5	Raritan	10	Rocky Brook on Rte 33 in Hightstown	10-ROC-1	Arsenic, Chromium, Lead, Zinc	NJDEP Metal Recon
3	Raritan	10	Rocky Brook on Rte 33 in Hightstown	10-ROC-1	Cadmium, Copper, Mercury, Nickel, Selenium, Zinc	NJDEP Metal Recon
3	Raritan	10	Rosedale Lake-10	Rosedale Lake	Phosphorus	NJDEP Clean Lakes
3	Raritan	10	Royce Brook at Rt 206 in Hillsborough	AN0411	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Royce Brook at Rt 533 in Manville	AN0413	Benthic Macroinvertebrates	NJDEP AMNET
3	Raritan	10	Royce Brook Branch at Rt 206 in Hillsborough	AN0412	Benthic Macroinvertebrates	NJDEP AMNET
3	Raritan	10	Running Brook (Rocky Brook) at Baird Rd (guardrail) in Millstone	MB-RA, MB-RB	Benthic Macroinvertebrates	Monmouth Co HD
3	Raritan	10	Shallow Brook at N of Scotts Cor in Plainsboro	AN0388	Benthic Macroinvertebrates	NJDEP AMNET
3	Raritan	10	Simonson Brook at Canal Rd in Franklin	AN0406	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Six Mile Run at Canal Rd in Blackwells Mill	EWQ0409	Phosphorus	EWQ

Raritan Watershed Region 10
New Jersey's Integrated List of Waterbodies

Sublist	Wtrshd Region	WMA	Station Name/Waterbody	Site ID	Parameters	Data Source
1	Raritan	10	Six Mile Run at Canal Rd in Blackwells Mill	EWQ0409	pH, Nitrate, Dissolved Solids, Total Suspended Solids, Unionized Ammonia	EWQ
5	Raritan	10	Six Mile Run at Canal Rd in Franklin	AN0409	Benthic Macroinvertebrates	NJDEP AMNET
3	Raritan	10	Six Mile Run at Rt 27 in Franklin	AN0408	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Stony Brook at Carter Rd in Lawrence.	AN0393B	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Stony Brook at Linvale Rd in Amwell	AN0391A	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Stony Brook at Mine Rd in Hopewell	AN0391	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Stony Brook at Old Mill Rd in Hopewell	AN0392	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Stony Brook at Pennington-Rocky Hill Rd in Hopewell	AN0392A	Benthic Macroinvertebrates	NJDEP AMNET
4	Raritan	10	Stony Brook at Princeton	01401000, 10-STO-1, 10-STO-4	Fecal Coliform	NJDEP/USGS Data, EWQ, Metal Recon
5	Raritan	10	Stony Brook at Princeton	01401000, 10-STO-1, 10-STO-4	Phosphorus, pH, Total Suspended Solids, Arsenic	NJDEP/USGS Data, EWQ, Metal Recon
3	Raritan	10	Stony Brook at Princeton	01401000, 10-STO-1, 10-STO-4	Cadmium, Mercury	NJDEP/USGS Data, EWQ, Metal Recon
1	Raritan	10	Stony Brook at Princeton	01401000, 10-STO-1, 10-STO-4	Nitrate, Dissolved Solids, Unionized Ammonia, Chromium, Copper, Lead, Nickel, Selenium, Zinc	NJDEP/USGS Data, EWQ, Metal Recon
5	Raritan	10	Stony Brook at Province Line Rd in Princeton.	AN0393A	Benthic Macroinvertebrates	NJDEP AMNET
5	Raritan	10	Stony Brook at Rt 206 in Princeton	AN0393	Benthic Macroinvertebrates	NJDEP AMNET
1	Raritan	10	Stony Brook on Mine Rd in Hopewell	10-STO-3	Chromium, Copper, Lead, Nickel, Selenium, Zinc	NJDEP Metal Recon
5	Raritan	10	Stony Brook on Mine Rd in Hopewell	10-STO-3	Mercury	NJDEP Metal Recon
3	Raritan	10	Stony Brook on Mine Rd in Hopewell	10-STO-3	Arsenic, Cadmium	NJDEP Metal Recon
3	Raritan	10	Ten Mile Run at Canal Rd in Franklin	AN0407	Benthic Macroinvertebrates	NJDEP AMNET