

RESOLUTION

STORMWATER MANAGEMENT PLAN

WHEREAS, the Township of Branchburg Planning Board (the "Board") held a public hearing on April 25, 2006, at which time it considered the proposed Stormwater Management Plan (the "Plan") prepared by Douglas Ball, Township Engineer;

NOW THEREFORE, BE IT RESOLVED by the Planning Board of the Township of Branchburg that the Board hereby adopts all of the recommendations set forth in the proposed Stormwater Management Plan prepared by Douglas Ball, Township Engineer, and recommends that the Plan be forwarded to the Township governing body for implementation.

Approved by PB: 4/25/06  
Adopted by PB: 5/9/06

On a motion by Mr. Pollin, seconded by Mrs. Sarles,  
the Planning Board voted to adopt the Resolution.

## STORMWATER MANAGEMENT PLAN

APPROVED: 4/25/06      RESOLUTION ADOPTED: 05/09/06

Member	Y	N	NE	NV	ABS	Member	Y	N	NE	NV	ABS
DECKER					X	HOLZMANN	Y				
DEVLIN	Y					SANDVIG	Y				
SARLES	Y					POLLIN	Y				
SANFORD	Y					MELITSKI	Y				
GRENCI	Y										

X – Indicates Vote  
NE – Not Eligible to Vote  
NV - Not Voting (Abstained)  
ABS – Absent


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**JAMES MELITSKI, CHAIRMAN**


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**TOM DECKER, SECRETARY**

**Final Draft  
of  
The Stormwater Management Plan  
for  
Branchburg Township  
Somerset County, New Jersey**

**Prepared by:**

**Branchburg Engineering Department  
Douglas Ball, P.E.  
1077 Route 202 North  
Branchburg New Jersey  
April 10, 2006**

## **Introduction**

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for Branchburg Township ("the 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 all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The 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. These standards are 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 describes long-term operation and maintenance measures for existing and future stormwater facilities.

This plan also addresses the review and update of existing ordinances, the Township Master Plan, and other planning documents to allow for project designs that include low impact development techniques. In addition, the plan includes a mitigation strategy for when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

## **MSWMP Goals**

The goals of this MSWMP are to:

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

To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventive and corrective

maintenance strategies are included in the plan to ensure long-term effectiveness of stormwater management facilities. The plan also outlines safety standards for stormwater infrastructure to be implemented to protect public safety.

### **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. 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. 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 destroy habitat from 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 may possibly include metals, suspended solids, hydrocarbons, pathogens, and nutrients.

In addition to increased pollutant loading, 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 cold water fish species such as trout. Development can remove trees along stream banks that normally provide shade, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

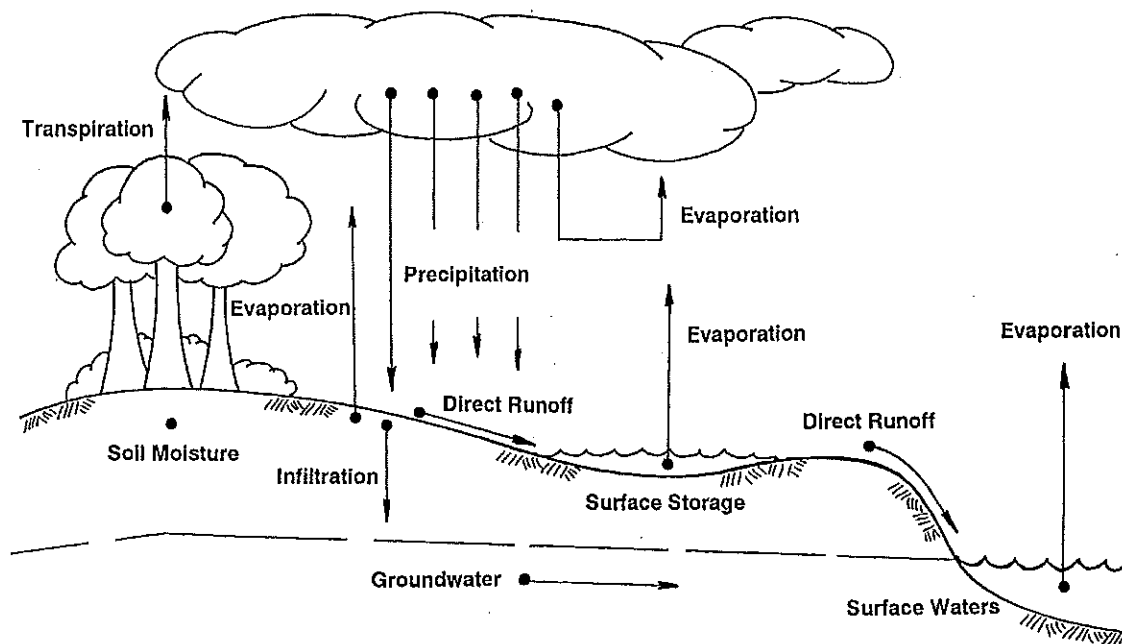


Figure 1 – Hydrologic Cycle

## Background

The Township encompasses 20.2 square miles in the western part of Somerset County, New Jersey. Branchburg is a semi-rural area. The Township land use is comprised of residential (35%), farmland assessed (24%), public to semi-public (24%), industrial/utilities (8%), vacant undeveloped (5%) and commercial (4%). The undeveloped areas that exist are sporadically located in close proximity to the Route 202 and Route 22 corridors, having commercial and industrial zoned uses situated. Stream and rivers within the Township are shown in Figure 2 and the topography of the Township is shown in Figure 3.

According to the 2000 census, the Township has 14,566 residents. The population rose approximately 34 percent since the 1990 census. This population increase is more than the overall state and county increases of approximately 9 and 24 percent respectively over the same period.

The Township is situated along the west side of the North and South Branch Raritan River in the Raritan Basin. It is located in Watershed Management Area (WMA) 8. The Township contains portions of seven Hydrologic Unit Code (HUC) areas. These HUC14 areas are shown in Figure 4.

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 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 biometrics related to benthic macroinvertebrate community dynamics.

Based on the AMNET data, there are six AMNET sites within the municipal border, of which two sites have a moderate level of impairment and four sites indicating no impairment. There is also ten AMNET sites upstream along various streams and one AMNET site downstream on the Raritan River.

In addition to the AMNET data, the NJDEP and other regulatory agencies collect water quality chemical data on the streams in the state. These data show that the instream total phosphorus concentrations and fecal coliform concentrations of the Raritan River frequently exceed the state's criteria. This means that the river is an impaired waterway and the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for these pollutants.

A TMDL is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for one or more of its designated uses. 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 BMP's.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)) (Integrated List) is required by the federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report presents the extent to which New Jersey waters are attaining water quality standards, and identifies waters that are impaired. 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. The Lamington River at Burnt Mills is listed in the proposed Sublist 5 as non-attaining for phosphorous. Holland Brook at South Branch Road is non-attaining for macro-invertebrates (AN0343). The South Branch of the Raritan River is also listed on the proposed Sublist 5 (March 1, 2004) for phosphorous (01397400, 8-SB-4), arsenic, pH, chromium, copper, lead (01398102, 8-SB-6) and benthic macroinvertebrates (AN0326).

In addition to water quality problems, the Township has occasional flooding problems. Flooding occurs on the Raritan River near Route 28, Old York Road, Studdiford Drive, Blackpoint Road and Woodfern Road. The 100-year floodplain, shown in Figure 5, depicts the North and South Branch Raritan River, Chambers Brook, Holland Brook and Pleasant Run floodplains.

In conjunction with the USGS, Somerset County operates a flood information system for its 21 municipalities. The Somerset County Flood Information System (SCFIS) consists of a network of stream and precipitation gages throughout the County. Information from these gages is automatically transmitted to a central location via telephone, radio and satellite. The information is then processed and appropriate actions are taken. These actions include notifying municipal police, fire and emergency management personnel with flood potential and water level information.

There are several SCFIS stream and precipitation gages near Branchburg Township. The Township has stream gages along the North and South Branches of the Raritan River and on the Lamington River at Burnt Mills Road. There is a precipitation near Holland Brook near the Hunterdon County border. There are stream gages on the following streams:

NORTH BRANCH RARITAN RIVER NEAR FAR HILLS NJ  
NORTH BRANCH RARITAN RIVER NEAR RARITAN NJ  
NB RARITAN River AT SOUTH BRANCH NJ

Information from these latter gages is available on the United States Geological Survey (USGS) web site in real time (<http://waterdata.usgs.gov/nj/nwis>).

The Township has a small amount of developable land. The existing land use, based on 1995/1997 aerial photography, is shown in Figure 6. The existing zoning is shown in Figure 7. A current aerial photo with parcel lot lines overlain on it is shown in Figure 8. The Township is not within the State Plan Designation PA1 Metropolitan Planning Area or in a designated center where infiltration requirements are not applicable. Groundwater recharge rates for native soils in this area are generally between 7 and 11 inches annually. The average annual groundwater recharge rates are shown graphically in Figure 9.

According to the NJDEP, "A Well Head Protection Area (WHPA) in New Jersey is a map area calculated around a Public Community Water Supply (PCWS) well in New Jersey that delineates the horizontal extent of ground water captured by a well pumping at a specific rate over a two-, five-, and twelve-year period of time for unconfined wells. The confined wells have a fifty foot radius delineated around each well serving as the well head protection area to be controlled by the water purveyor in accordance with Safe Drinking Water Regulations (see NJAC 7:10-11.7(b)1)."

As shown in Figure 10, at the date the development of this report, the Township does not contain any Well Head Protection Areas.

In addition to the rivers and streams that run through and along the Township, there are a number of wetland areas. These wetland areas, shown in Figure 11, provide flood storage, nonpoint pollutant removal and habitat for flora and fauna.



## **Design and Performance Standards**

The Township will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. The design and performance standards include the language for maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5-8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins. The ordinances will be submitted to the County for review and approval within 24 month of the effective date of the Stormwater Management Rules.

## **Plan Consistency**

The Township is not within a Regional Stormwater Management Planning Area and no TMDL's have been developed for waters within the Township; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) nor any TMDL's. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

The Township is within the Raritan Basin and much information on the basin and about its characteristics has been developed as part of the Raritan Plan. Additional information concerning this plan can be found at: <http://www.raritanbasin.org>. The Township supports the Raritan Plan.

The Branchburg Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. The Township will utilize the most current update of the RSIS in the stormwater review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates of the RSIS.

The Township's Stormwater Management Ordinance requires all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, Township inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the local Soil Conservation District.

## **Nonstructural Stormwater Management Strategies**

The Township has reviewed the master plan and ordinances, and has provided a list of the sections in the Township land use and zoning ordinances that are to be modified to incorporate nonstructural stormwater management strategies. These are the ordinances identified for revision. Once the ordinance texts are completed, they will be submitted to the county review agency for review and approval within 24 months of the effective date of the Stormwater Management Rules. A copy will be sent to the Department of Environmental Protection at the time of submission.

The following documents have been identified that require modifications in order to comply to the State's Stormwater Regulations:

1. The Branchburg Township Master Plan dated 1988, revised August 1993 and August 1999.
2. The Branchburg Township Land Development Ordinance Amended June 30, 2004.
  - A. Article 5- Site Plan and Subdivision Requirements
  - B. Article 6- Development Application Review
  - C. Article 7- Administration, Enforcement and Fees
  - D. Article 8- Flood Plain Management
  - E. Article 9- Soil and Soil Removal
  - F. Article 10- Stormwater Management

### **Land Use/Build-Out Analysis**

Since the Township of Branchburg has a combined total of more than one square mile of vacant lands, the Township is required to do a build-out analysis. The Township plans to accumulate the various attributes to produce a map that will indicate developable lands. The attributes will include existing roads, parcels, surface water bodies, HUC 14 areas, land use types, and various environmental elements. In addition, certain deeded restrictions and easements will be incorporated to the list of attributes. Upon completion, the Township will superimpose the current zoning to the available lands for development and the respective maximum impervious coverage. The result will provide "build – out" for the Township indicating the maximum impervious coverage. The Township will then compare the build-out to the existing impervious coverage.

### **Mitigation Plan Element**

A municipal stormwater mitigation plan element shall be developed to enable the Township to waive certain requirements or exemptions to the design and performance standards for stormwater runoff quality, stormwater runoff quantity and the groundwater recharge, established under the New Jersey Stormwater Management rules as defined in N.J.A.C. 7:8-5 and the municipal stormwater control ordinances. The existence of a mitigation plan shall not preclude the applicant in complying to the design and performance standards, however, it shall be utilized where full compliance cannot be reasonably accommodated on-site.

The Mitigation Plan element of the the Stormwater Management Plan shall identify the sensitive receptors within the municipality. The sensitive receptors shall include areas with specific sensitivity to impacts of stormwater runoff quantity, stormwater quality or groundwater recharge. These sensitive receptors shall be identified as goals in which applicants may contribute towards in lieu of addressing on-site. Each identified location shall have specific project criteria listing what shall be addressed; stormwater runoff quality, stormwater runoff quantity or groundwater recharge. Presented is a hierarchy of options.

## Mitigation Project Criteria

1. The mitigation project must be implemented in the same drainage area as the proposed development. The project must provide additional protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Stormwater Management Plan. The developer must ensure the long-term maintenance of the project, including the maintenance requirements under Chapters 8 and 9 of the NJDEP Stormwater BMP Manual.
2. If a suitable site cannot be located in the same drainage area as the proposed development, as discussed in Option 1, the mitigation project may provide mitigation that is not equivalent to the impacts for which the variance or exemption is sought, but that addresses the same issue. For example, if a variance is given because the 80 percent TSS requirement is not met, the selected project may address water quality impacts that impact aquatic life along certain streams.

The Township may allow a developer to provide funding or partial funding to the Township for an environmental enhancement project that has been identified in a Municipal Stormwater Management Plan, or towards the development of a Regional Stormwater Management Plan. The funding must be equal to or greater than the cost to implement the mitigation goal, including costs associated with purchasing the property or easement for mitigation, and the cost associated with the long-term maintenance requirements of the mitigation measure.

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