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April 28, 2005

Mr. Robert Bzik
Somerset County Planning Board
20 Grove Street
Somerville, NJ 08867

Re: Somerville Borough Municipal Stormwater Management Plan

Dear Bob:

The enclosed copy of the Somerville Borough Municipal Stormwater Management Plan is being forwarded to you in accordance with the County Planning Act at NJSA 40:27-4 and NJAC 7:8. Specifically, these citations require the Municipal Stormwater Management Plan to be forwarded to the County Planning Board within 30 days following its adoption. This plan was adopted by Somerville Borough Council on April 4, 2005 and was formally adopted by the Planning Board on April 27, 2005.

If you should have any questions regarding this matter, please don't hesitate to contact me.

Sincerely,



Christopher A. Melick
For Michael J. Amorosa, Borough Engineer

cc: Frank Vuoso
Brendan Nally
Peter Hendershot
Joyce Nipps
Michael Cole (by fax 856-216-0919)
Carl Andreassen
Adam Slutsky

Stormwater Management Plan

For

**Borough of Somerville
Somerset County, New Jersey**

Prepared by:

Somerset County Engineering Division

March 2005

Stormwater Management Plan for Borough of Somerville

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Introduction

This Municipal Stormwater Management Plan (Plan) describes the Borough of Somerville's requirements for addressing stormwater related impacts of land development and re-development projects, and has been developed to meet obligations detailed in the Borough's Tier A Municipal Stormwater General Permit (NJPDES Permit No. NJ0141852). This permit is required by the New Jersey Department of Environmental Protection (NJDEP) and is described in N.J.A.C. 7:14A – Municipal Stormwater Regulations. Somerville's permit is also included in Appendix A of this plan.

Preparation of the Plan has followed the recommendations detailed in the NJDEP *Tier A Stormwater Guidance Document* and contains all of the required plan elements specified in N.J.A.C. 7:8 – Stormwater Management Rules (See Appendix B for a copy of the rules). The Plan includes design and performance standards to mitigate groundwater recharge, stormwater quality, and stormwater quantity impacts of major land development and re-development projects. (A major land development or re-development project is defined as a residential project that disturbs one or more acres of land or a non-residential project that either disturbs one or more acres of land or adds an additional one-quarter acre or more of impervious cover.) The Plan also describes operation and maintenance requirements for ensuring the long-term performance of the stormwater management facilities that are constructed to achieve the standards.

This plan also addresses the review and update of existing ordinances, the Borough 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.

This Plan contains the Municipal Stormwater Management Plan components necessary to meet the April 1, 2005 implementation schedule. It is noted that revisions to the Plan may be necessary over the next several months, as the municipality reviews its ordinances, and prepares to adopt an ordinance implementing this Plan, in accordance with the required implementation schedule noted in the permit conditions. In addition, periodic revisions to the Plan may be necessary to meet specific municipal planning goals.

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 addressed 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 can 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 shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

Background

The Borough encompasses 2.4 square miles in heart of Somerset County, New Jersey. The Borough “enjoys a mix of commercial, professional and residential development while also enjoying the ambiance of a small town with a main street setting unique in the region.” (Somerville Borough Web Site, 2004). The Borough is an older community and few large areas of undeveloped area remain. The undeveloped areas that do exist are stream corridors along the Raritan River, and Peters Brook. Stream and rivers within the Borough are shown in Figure 2 and the topography of the Borough is shown in Figure 3.

According to the 2000 census, the Borough has 12,423 residents. However, the daytime population expands to over 20,000 with the influx of commuters to County, State and private offices located within the Borough. The population rose approximately 7 percent since the 1990 census. This population increase is significant but less than the overall State and County increases of approximately 9 and 24 percent respectively over the same period.

The Borough is situated along the north side of the main stem of the Raritan River in the Raritan Basin. It is located in Watershed Management Area (WMA) 9 – lower Raritan River. The Borough contains portions of three Hydrologic Unit Code (HUC) areas for Peter’s Brook (HUC 02030105080010) and the Raritan River (HUC 02030105080020 and HUC 02030105080030). 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.