

STORMWATER MANAGEMENT PLAN

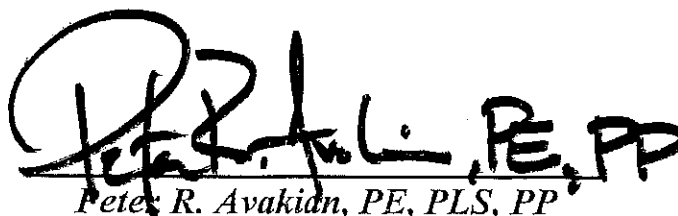
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***BOROUGH OF TINTON FALLS
MONMOUTH COUNTY***

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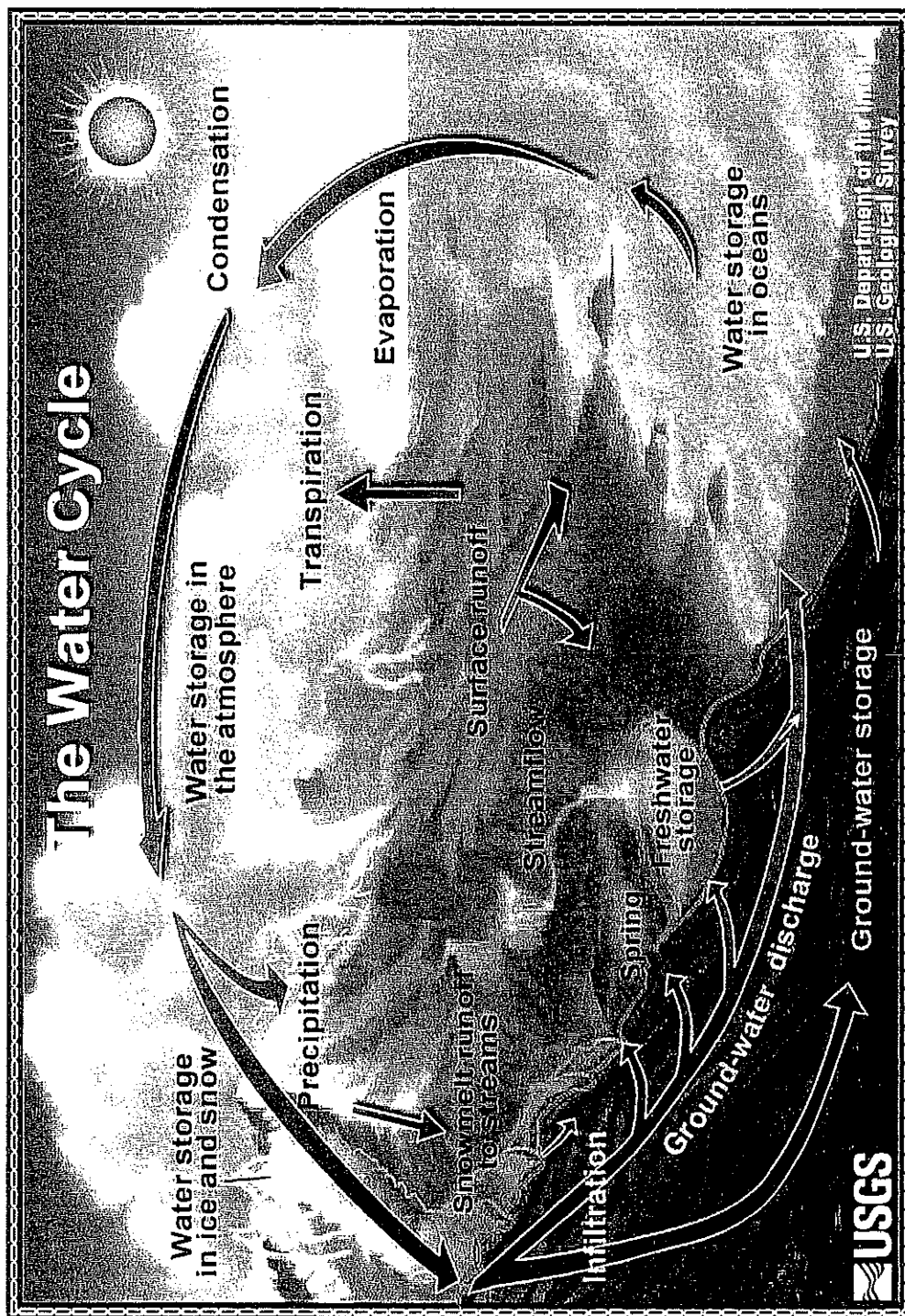
1.0 Introduction

This document has been prepared in accordance with the New Jersey Department of Environmental Protection (NJDEP) *Tier A Stormwater Guidance Document* dated April 2004 in order to establish the Borough of Tinton Falls's strategy to address stormwater-runoff impacts. It is important to note that this plan will require an update to include a required modification to incorporate the adopted municipal stormwater control ordinances in early 2006.

1.1 How Does Stormwater Runoff Affect Us?

Stormwater runoff is part of the largest remaining major source of pollutants in our nation's waters and the quality of surface and ground water is directly related to the health of the environment. It is estimated by the New Jersey Department of Environmental Protection, that up to 60 percent of existing water pollution problems are attributable to nonpoint source pollution. Nonpoint source pollution, and particularly, stormwater runoff is difficult to identify, control, and treat. In natural environments, those areas undisturbed by development, native vegetation either directly intercepts precipitation or draws from runoff that has infiltrated into the ground and returns it to the atmosphere through the process of evapotranspiration. A portion of precipitation runs off the land's surface to recharge surface water. Additional rainfall that lands on the ground's surface infiltrates through the soil and provides natural recharge of the groundwater. This process, known as the hydrologic cycle (see attached graphic), functions in equilibrium, but is extremely susceptible to impacts resulting from changes to the cycle's processes.

It has been shown that land development can dramatically impact the hydrology of a watershed if stormwater-runoff related impacts are not considered carefully. Development typically alters natural vegetation through the placement of lawns and impervious cover, thereby reducing the watershed's evaporation, transpiration and infiltration rates. Construction activities can compact the soil and reduce its infiltration ability, resulting in increased volumes and rates of stormwater runoff from a site. In the past, development typically involved the construction of impervious areas connected to each other through gutters, channels, and storm sewers. These structures can transport runoff more quickly than natural areas and cause erosion and water quality problems, as well as flooding in areas downstream of development. Often people do not know or understand that there are alternatives to the traditional way of managing their property. For example, homeowners can have a green lawn without massive doses of fertilizers and pesticides; pet owners should deposit pet waste in the trash or in the toilet and not leave it at the curb. Typically, people are unaware that storm drains often discharge directly into water bodies. When people allow motor oil, trash, and animal waste to enter the storm drainage system, they don't realize that it may end up in a nearby lake or the public drinking water supply. Individually these acts may seem insignificant, but their



The Hydrologic Cycle

cumulative impact contributes to stormwater/nonpoint source pollution and reduces water quality.

1.2 Municipal Separate Storm Sewer Systems (MS4) Program

In response to the United States Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) Phase II regulations adopted in December 1999, the State of New Jersey developed the Municipal Stormwater Regulation Program. This program addresses pollutants entering our waters from storm drainage systems operated by local, county, state, interstate, and federal government agencies. These systems are referred to as "municipal separate storm sewer systems" or MS4s and are regulated under the New Jersey Pollutant Discharge Elimination System (NJPDES) Rules (N.J.A.C. 7:14A). The NJDEP released four (4) NJPDES Stormwater General Permits for the various MS4s. These include:

1. Tier A Municipal Stormwater General Permit;
2. Tier B Municipal Stormwater General Permit;
3. Public Complex Stormwater General Permit;
4. Highway Agency Stormwater General Permit.

For each General Permit, NJDEP has mandated Statewide Basic Requirements (SBRs), which include minimum standards, measurable goals, and implementation schedules. The minimum standards are one or more actions that must be taken to comply with the requirements of the permit. The measurable goals are the mechanism for reporting to NJDEP the progress that the municipality has made; those are accomplished primarily through the submittal of an Annual Report and Certification (see Appendix C). The implementation schedule sets the deadlines for permit compliance. All municipalities within the State of New Jersey have been classified as either Tier A or Tier B communities depending on population density as determined in the 2000 United States Census.

The Borough of Tinton Falls had been designated as a Tier A community. As such, the Borough is regulated under the NJPDES Stormwater Tier A General Permit, NJPDES No. NJG0153532. As part of the permit, several SBRs were mandated and an implementation schedule was established. The following minimum standards apply to all Tier A municipalities:

1. Adoption of a municipal stormwater management plan (this document) in accordance with the requirements of N.J.A.C. 7:8-4 (due April 2005).
2. Adoption and implementation of municipal stormwater control ordinances in accordance with N.J.A.C. 7:8-4. The ordinances shall address the control of stormwater from non-residential development and redevelopment projects as well as control aspects of residential development and redevelopment projects

implemented for all municipalities in the State 12 months from the date of adoption of the Stormwater Management Plan.

2.0 Stormwater Management Plan Goals

Several minimum goals for Tier A municipal stormwater management plans were identified in the NJDEP Guidance document and include:

- 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 source pollution;
- Maintain the integrity of stream channels for their biological functions, as well as for drainage;
- Minimize pollutants in stormwater runoff from new and existing development in order 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;
- Protect public safety through the proper design and operation of stormwater management basins.

In addition to the minimum goals required by the NJPDES General Permit, the following goals and objectives are set forth in the current municipal Master Plan, for consideration in developing municipal ordinances:

- 1) Basic Goal – The basic goal of the Master Plan is to establish objectives which will guide the completion of the development of the community in a way that will develop an overall quality of life sensitive to environmental constraints such as tree removal, soil removal, erosion control, flood plain management, wetland protection, and water quality as well as a balance between jobs and housing and provision for adequate municipal services including recreation, schools, utilities, roads, recycling programs, and emergency services.
- 2) Character of Development – The goal is to recognize the existing character of development as a means of establishing the type and intensity of future development.

- 3) Environment – The goal is to have existing and proposed uses embody state of the art plans to protect the environment.
- 4) Housing – The goal is to provide a cross section of housing in the Borough ranging from low density, single family housing and farms to higher density, multi-family housing.
- 5) Jobs and Retail Services – The goal is to provide appropriate space where employment and retail services can be provided to balance the recent, rapid housing and population growth in the Borough.
- 6) Road System – The overall goal of this Plan is to anticipate the necessary road and intersection improvements to provide adequate road capacity and the safe movement of traffic.
- 7) Water and Sewer Services – The goal is to anticipate water and sewer services throughout the Borough.
- 8) School, Recreation and Other Infrastructure – It is the goal of this Plan to anticipate additional schools, new recreation areas, expanded emergency services, an expanded library, and a larger municipal complex.
- 9) Historic Preservation – The goals of historic preservation are to safeguard the heritage of the Borough by preserving those resources that reflect social, cultural, economic and architectural significance and by encouraging their continued use and re-use while discouraging their demolition.

To achieve the above goals and objectives, this plan outlines specific stormwater design and performance standards for new development and redevelopment. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventative 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 protect public safety.

Floodplain management standards mandated through the National Flood Insurance Program (NFIP) are beneficial in minimizing the risks to new development. However compliance with the minimum standards may not protect existing development from the increased risk of flooding due to new development. This Program encourages local governments to adopt additional measures beyond the minimums that will reduce local flooding and benefit neighboring and downstream locales (Code of Federal Regulations, 44 CFR §60.1(d)). Authority is vested in the local jurisdiction to manage and police actions in their town.

3.0 Municipal Background

The Borough of Tinton Falls is located in the central portion of Monmouth County and contains a land area of approximately 15.15 square miles. Despite tremendous growth pressure resulting from the suburban expansion of both the New York metropolitan area (located 40 miles to the north), and the Philadelphia metropolitan area (located 65 miles to the southwest), Tinton Falls maintains a rural character.

The estimated population in 2004 is calculated to be 16,332 residents (adjusted from the 2000 United States Census population of 15,053), significantly higher than the 7,740 residents reported in the 1980 census and the 12,361 residents reported in the 1990 census. Regional growth and Tinton Falls's attractive natural surroundings and close proximity to the Atlantic Coast continue to attract new residents.

Tinton Falls Statistics	
Population:	16,332
Area:	15.15 square miles
Mayor:	Ann Y. McNamara
LuAnn Catlin	
Jerry Donlon	
Therese Cahill	
Peter Maclearie	
Brendan Tobin	

The Borough of Tinton Falls has a long, slender shaped boundary, approximately 8.6 miles in length and 2.7 miles in width at its widest point. It is surrounded by numerous other municipalities situated in the Monmouth County, including: Middletown Township to the north; Wall Township to the south; Colts Neck to the west; and along the easterly border, Shrewsbury Borough; Eatontown Borough; Ocean Township; and Neptune Township.

The Tinton Falls Planning Board is currently performing a reexamination of the Master Plan, intending to incorporate elements preserving the natural resources of the Borough, while developed a wide range of land use ordinances adopted by Borough Council. The various zoning districts in the Borough of Tinton Falls are designated by the Borough's land use ordinances, and are identified as follows:

Tinton Falls Borough Zone Districts:

<u>Zone</u>	<u>Designation</u>
R-1	Residential District
R-2	Residential District
R-3	Residential District
R-4	Residential District
SO-15A	Special Office District
SO-15B	Special Office District

VC	Village Commercial District
C-1	Neighborhood Retail Commercial District
C-2	Shopping Center District
C-3	Highway Business and Office District
C-4	Office and Regional Shopping District
C-5	Regional Shopping Center District
IOP	Industrial Office Park Districts
SI	Special Industrial District
MFG	Manufacturing District
-	Historic District

3.1 Natural Resources and Sensitive Areas

3.1.1 Natural and Historic Resources

The Borough of Tinton Falls lies within the Outer Coastal Plain, which consists of gently sloping and relatively low lying areas formed on unconsolidated and semi-consolidated marine alluvial sediments. These sediments include clay, silt, sand and gravel which were deposited as sea level rose and fell during the end of the Cretaceous Period of the Mesozoic Era and the Tertiary Period of the Cenozoic Era.

The United States Department of Agriculture Soil Conservation Service has delineated the soil types throughout the State, and published a soil survey for each county. The soil survey for Monmouth County has delineated numerous soil types within the Borough, the major types designated as follows: Evesboro Sand; Freehold Sandy Loams; Tinton Loamy Sand; Lakewood Sand; Lakehurst Sand; Atsion Sand; and Pits Sand and Gravel.

Natural and environmental features in the Borough have been mapped and are included in Appendix B as follows: Land Use and Land Cover; Hydrology and HUC 14 Watershed Map; USGS Quadrangle Map, including topographic contours; Groundwater Recharge Mapping; Wellhead Protection Area Map.

The Borough of Tinton Falls is also rich in historical heritage. The village at Tinton Falls was first settled shortly after 1665, and the Borough is home to wonderfully preserved historical features, including the Tinton Manor Iron Works; the Old Grist Mill at Tinton Falls; the Mineral Spring; the Village Green and the Waterfall, all of which are identified in the historic preservation plan element of the Master Plan.

The Borough also contains a significant inventory of historic residential properties, including the Miller's Residence, destroyed by fire in 1977; the Slowinski Residence, dating back to 1804; and numerous other residential properties identified by original

owners in the historic preservation plan element. Whenever possible, the Borough has encouraged preservation of historically important properties.

3.1.2 Water Resources

The topography of the Borough of Tinton Falls has a level to moderate slope toward the adjacent water bodies. The northerly quadrant of the Borough drains to the Shrewsbury Watershed, primarily through Pine Brook; the easterly quadrant of the Borough drains to the Whalepond Watershed, primarily through Poplar Brook and Whalepond Brook; and the southerly quadrant of the Borough drains to the Shark River Watershed, primarily through Shark River Brook and Jumping Brook.

The highest elevation in the Borough is approximately 160 feet above mean sea level, and occurs within the limits of N. W. S. Earle property, with the lowest elevations of 20 to 40 feet above mean sea level occurring along the stream corridors. Most of the Borough lies between the elevations of 40 to 80 feet above mean sea level.

The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps which identify 100 year and 500 year flood hazard areas and are on file with the Municipal Clerk for public information. These maps help delineate the sensitive environmental areas which extend along the collector streams and creeks within the Borough. The majority of environmentally sensitive areas occur along the stormwater runoff corridors previously identified.

The Borough of Tinton Falls has a considerable amount of water frontage along these environmentally sensitive stream corridors. The Borough will consider enhanced efforts to increase active and passive uses of these waterways so they may be enjoyed by all.

3.1.3 Water Supply and Sewerage Facilities

The Borough of Tinton Falls is serviced by the New Jersey American Water Company which provides water service to 21 municipalities in eastern Monmouth County. The water company is located on Shrewsbury Avenue in the neighboring Borough of Shrewsbury. The water company obtains its water supplies from the Swimming River Reservoir off Swimming River Road in Middletown Township, and the Manasquan Reservoir located in Howell Township. The water pressure throughout the Borough is adequate and there has been no lack of available water for prospective customers in the Borough. No water supply shortages are anticipated in the immediate future.

The existing sewage infrastructure in the Borough is collected and fed through a gravity piping system to a sewage disposal system operated by several regional sewerage authorities. They include the Two Rivers Water Reclamation Authority (formerly the Northeast Monmouth County Regional Sewerage Authority); the Township of Neptune Sewerage Authority; and the Township of Ocean Sewerage Authority. As a service customer, Tinton Falls is billed a flat rate based upon the total number of residential units

and commercial establishments located within the municipality. Based upon compliance with existing zoning regulations, the existing infrastructure is anticipated to be adequate to handle all future expansions.

3.1.4 Environmental Resources

The National Wetlands Inventory mapping outlines the approximate boundaries of the freshwater wetlands are taken from information prepared by the United States Department of Interior Fish and Wildlife Service. The boundaries are established in accordance with three parameter requirements of the New Jersey Department of Environmental Protection, hydrology, soil and vegetation.

Wetland areas are classified as an exceptional resource value when they discharge into trout production waters or their tributaries, or if they provide a habitat for a threatened or endangered species. Wetlands are classified as ordinary resource value if they are isolated, not a surface tributary to inland lakes or ponds, and are more than 50 percent surrounded by development. Wetlands of intermediate resource value are classified as all other wetland areas. The significance of the resource value of a wetland area is a function of the transition area requirements. A transition area of 150 feet is required around wetlands of exceptional value, whereas an area of 50 feet is required around wetlands of ordinary value.

Substantial areas of wetlands are still privately owned throughout the Borough. These vital areas are crucial to maintaining bio-diversity within our region. While current State regulations limit disturbance of wetland areas, we still see encroachment into these environmentally sensitive areas. Efforts should be made to further protect these areas from disturbance.

3.1.5 Open Space Areas (Sensitive Areas)

The Borough of Tinton Falls has adopted open space planning goals and objectives, to insure the short term and long term recreational and open space needs of the residents of the Borough of Tinton Falls are met. These goals and objectives have evolved into a series of active and passive open space acquisition and development projects, as is evident in the Pine Brook Greenway project.

The Pine Brook Greenway Project is being developed to provide pedestrian access to the most scenic and ecologically diverse part of the Pine Brook stream corridor. The Pine Brook has extraordinary scenic beauty and a great diversity of flora and fauna, the result of natural protection of steep banks and marshes, and the tidal influences of the estuary. The Greenway will follow the stream to connect the historic district at the Falls with the canoe launch site at the Swimming River near Newman Springs Road, a distance of almost two miles.

Some of the underdeveloped portions of the Borough remain heavily wooded, holding substantial populations of wildlife. A few of these areas contain steep and fragile slopes. These areas are of vital importance for protection, particularly due to the potential for erosion once disturbed, and the potential impact on surface water quality and flooding.

The Borough has had an excellent relationship with the New Jersey Green Acres Program. Tinton Falls has successfully implemented several grants and loans from Green Acres, benefiting the preservation of both open space and recreational facilities. It is our expectation that such relationships and support will continue.

3.2 Existing Stormwater Infrastructure

The existing municipal infrastructure consists of various types, sizes and lengths of storm drainage facilities. In 1994, these facilities were mapped on a municipal aerial database, utilizing funds from the Sewage Infrastructure Improvement Act. The maps represent an accurate location of all existing infrastructure, inclusive of drainage inlets and manholes, pipe type and length, outfall locations and sizes directing stormwater runoff into our receiving waters of the Whalepond, Shrewsbury and Shark River watersheds.

The Borough of Tinton Falls promotes an annual maintenance schedule including implementation of capital improvement projects, upgrading storm drainage facilities. In addition, the Borough will be implementing regulations to insure compliance with the Stormwater Management Rules of the State of New Jersey for all proposed roadway improvement and storm drainage improvement projects undertaken in the Borough.

4.0 Design and Performance Standards

The design and performance standards for stormwater management measures for the Borough of Tinton Falls include those presented in N.J.A.C. 7:8-5 and will be required for all projects classified as 'major development' disturbing one or more acres or increasing impervious surface by 1/4 acres or more, must comply with these new regulations.

4.1 Design Standards

Stormwater management measures for major development shall be designed to meet the following standards, as required under N.J.A.C. 7:8-5:

- Erosion control – all proposed land disturbance must follow the *Standards for Soil Erosion and Sediment Control in New Jersey*;
- Groundwater recharge – all major development projects that are considered new construction must maintain 100% of the pre-developed groundwater recharge under post-developed conditions or demonstrate that the increase of runoff from

pre- to post- for the 2-year, 24-hour Natural Resources Conservation Service (NRCS) Type III storm (consistent with the most recent Technical Paper 40 release or replacement) is infiltrated. Non-structural groundwater recharge measures will be a focus of design;

- Stormwater runoff quantity – all major development projects must demonstrate compliance with one of the following: peak runoff flow rate mitigation, runoff volume mitigation, or hydrograph mitigation; and
- Stormwater runoff quality standards – all major development projects must demonstrate a minimum 80% Total Suspended Solids (TSS) removal rate.

4.1.1 Exemption/Waiver Criteria from Design Standards

It is important to note that several types of major development projects are exempt from some or all of the requirements identified above or for which a waiver from strict compliance with the above requirements can be obtained. These include the following:

Redevelopment projects are exempt from the groundwater recharge standards provided that the redevelopment involves disturbance only of previously disturbed areas. Additionally, a 50% TSS removal rate is required for proposed redevelopment projects involving only existing areas of impervious cover. Groundwater recharge requirements do not apply to projects subject to stormwater from areas of high pollutant loading and industrial stormwater exposed to “source material.”

Additionally, the following linear development projects are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements:

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.

It must be emphasized that utility work, although not subject to certain regulations, must be sensitive to negative impacts on natural resources and water quality.

A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements may be obtained for the enlargement of an existing public roadway or railroad, or the construction or enlargement of a public pedestrian access, provided that all of 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 above requirements to the maximum extent practicable;
3. The applicant demonstrates that, in order to meet the requirements above, existing structures currently in use, such as homes and buildings would need to be condemned; and
4. The applicant demonstrates that he/she does not own or have rights to areas that would provide opportunities to mitigate for the requirements above that are not achievable on-site.

Additionally, it is important to note that applicants that cannot meet one or more of the design requirements identified above can complete a project by providing a Mitigation Plan as identified in this plan with prior approval from the Borough.

4.1.2 Groundwater Recharge

The minimum design and performance standards for groundwater recharge require that the applicant either 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 demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the two-year storm is infiltrated. Groundwater recharge is prohibited from sites with high pollutant loading or industrial stormwater exposed to "source material." Groundwater recharge is prohibited for these properties and all future identified contaminated properties in accordance with N.J.A.C. 7:8-5.4(a). Adjacent properties also must consider the proximity of contaminated material.

All groundwater recharge analyses must be conducted using the New Jersey Groundwater Recharge Spreadsheet available through the *New Jersey Stormwater Best Management Practices Manual* (herein referred to as the BMP Manual, online at www.njstormwater.org). The professional engineer (or qualified hydrogeologist or geologist) shall assess the impacts on the groundwater table and design the site so as to avoid adverse hydrogeologic impacts. There are several potential adverse hydrogeologic impacts, including, but 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 down gradient of the groundwater recharge area.

For all structural and nonstructural infiltration measures, it is necessary to determine soil characteristics, the permeability (hydraulic conductivity) of the underlying soils and bedrock (where bedrock is shallow), and depth to groundwater on a subject property prior to designing infiltration measures. The applicant's professional must demonstrate the hydraulic viability of any proposed structural groundwater recharge measure through hydraulic testing. In order to meet the requirements for groundwater recharge, the

applicant is strongly encouraged to design nonstructural stormwater BMPs identified in this plan wherever feasible. Should nonstructural measures not satisfy the full groundwater recharge requirements, alternatively or in combination with the nonstructural measures, the applicant can utilize the structural techniques described in this plan.

4.1.3 Stormwater Runoff Quantity

For all options identified below, the applicant must establish Point(s) of Analysis (POA's) based on natural watershed divisions on the subject site in accordance with Section 5 of the BMP Manual. These POA's must then be analyzed under pre- and post-construction conditions as discussed below. In order to control stormwater runoff quantity impacts, the design engineer shall complete one of the following:

1. Hydrograph Mitigation - demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2, 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. Runoff Volume Mitigation - 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 leaving the site for the 2, 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. Peak Runoff Flow Rate Mitigation - 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 under all phases of the project.

Any application for a new agricultural development that meets the definition of major development shall be submitted to the Freehold Soil Conservation District for review and approval in accordance with the requirements of this section and the *Standards for Soil Erosion and Sediment Control in New Jersey* for stormwater runoff quantity and erosion control.

Stormwater runoff shall be calculated in accordance with the following:

1. The United States NJDEP of Agriculture (USDA) NRCS methodology, including the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in Section 4 of the National Engineering Handbook (NEH-4), dated July 2002, last

updated September 8, 2004, and incorporated herein by reference as amended and supplemented (refer to the National Weather Service:

<http://hdsc.nws.noaa.gov/hdsc/pfds/> for the rainfall frequency data). This methodology is additionally described in Technical Release 55 - Urban Hydrology for Small Watersheds (TR-55), dated June 1986, incorporated herein by reference as amended and supplemented; or

2. The Rational Method for peak flow and the Modified Rational Method for hydrograph computations. The rational and modified rational methods are described in "Appendix A-9 Modified Rational Method" in the *Standards for Soil Erosion and Sediment Control in New Jersey*. Refer to the National Weather Service: <http://hdsc.nws.noaa.gov/hdsc/pfds/> for the IDF curves

For the purpose of calculating runoff coefficients, there is a presumption that the pre-construction condition of a site is a wooded land use with good hydrologic condition. Alternatively, 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 (5) years without interruption prior to the time of application. If more than one land cover has existed on the 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.)

When 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. Additionally, when 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 or other methods described in the BMP Manual may be employed. If the invert of the outlet structure of a stormwater management measure is below the Flood Hazard Design Flood elevation, the design engineer shall take into account the effects of tailwater in the design of structural stormwater management measures.

Runoff quantity can be controlled using both nonstructural and structural BMPs as discussed in this plan. For design guidance on the various BMPs to satisfy the requirements of this plan, the applicant's professionals should refer to the BMP Manual.

4.1.4 Stormwater Runoff Quality

Per the State of New Jersey regulations, stormwater management measures shall be required for water quality control if one-quarter acre of impervious surface is being proposed on a major development project. Stormwater management measures shall be designed to reduce the post-construction load of Total Suspended Solids in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed site, expressed as an annual average. 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 this plan. The calculation of the volume of runoff may take into account the implementation of non-structural and structural stormwater management measures. 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 Pollutant Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement.

For purposes of TSS reduction calculations, this plan presents the presumed removal rates for certain BMPs designed in accordance with the *New Jersey Stormwater Best Management Practices Manual*. Alternative removal rates and calculation methods may be considered if the design engineer provides documentation demonstrating the capability of the alternative rates and methods to the Borough Engineer. A copy of any Borough approved alternative rate or method of calculating the removal rate shall be provided to NJDEP as required under N.J.A.C. 7:8-5.5.

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

$R = A + B - (A \times B) / 100$ 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

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 sub-areas converge onsite. Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction stormwater runoff nutrient load from the developed site generated during the water quality design storm. In achieving a 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 identified above.

Special water resource protection areas are mandated for all Category One watercourses in the State identified on either USGS or Soil Survey maps and perennial or intermittent streams that drain into these watercourses. 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. A Stream Corridor Protection Plan is proposed in order to better enforce these requirements. The requirements for these areas are as follows:

1. All major development projects shall preserve and maintain a 300-foot special water resource protection area on each side of the waterway, measured perpendicular to the waterway from the top of 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 a designated 300-foot special water resource protection area shall only be allowed where previous development or disturbance has occurred (for example, active agricultural use, parking area or maintained lawn area). The encroachment will only be allowed where sufficient documentation has been provided to ensure that the functional value and overall condition of the special water resource protection area will be maintained. 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. NJDEP will review all encroachments proposed under this item.
3. All stormwater must be discharged outside of the special water resource protection area and must comply with the Standard For Off-Site Stability in the "Standards for Soil Erosion and Sediment Control in New Jersey." It is important to note that stormwater can sheet flow through the special water resource protection area.
4. If stormwater discharged outside of 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," then stabilization measures may be placed within the special water resource protection area, provided that these stabilization measures are not placed within 150 feet of the waterway. Additionally, the stormwater discharged must achieve a 95 percent TSS post construction removal rate and temperature must be addressed to ensure no impact on the receiving stream. A conceptual project design meeting shall be held with NJDEP and Freehold Soil Conservation District staff to identify necessary stabilization measures.

Specific recommendations for water quality compliance are included in this plan. For detailed design guidance for the BMPs mentioned, refer to the BMP Manual.

4.2 Performance Standards

In order to ensure proper operation of all structural and nonstructural stormwater management measures, the Borough shall require that all projects considered major development incorporate maintenance plans for proposed stormwater management measures. These plans are essential to the long-term functionality of structural best management practices. All nonstructural BMPs must also be properly maintained to ensure long-term functionality. All maintenance plans 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). 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. Specific maintenance guidelines for structural stormwater management measures are available in the NJDEP BMP Manual.

If a person other than the developer (for example, a public agency or homeowners' association) is responsible 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 that person or entity. In no instance shall the responsibility for maintenance be assigned or transferred to the owner of an individual property in a residential development or project, unless the owner owns the entire residential development or project. If the person responsible for maintenance identified above is not a public agency, the maintenance plan and any future revisions shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

The person or entity responsible for maintenance (herein referred to as the responsible party) 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. Additionally, the responsible party shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed. All maintenance records and the maintenance plan shall be retained by the responsible party and made available, upon request by any public entity with administrative, health, environmental or safety authority over the site. Nothing in this section shall preclude the Borough of Tinton Falls from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53.

During construction for all major development projects, Borough inspectors will be onsite to observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed. After construction, the

Borough will regularly follow up with the person responsible for maintenance of the stormwater management structures associated with all major development projects.

As previously indicated, each year the Borough is responsible to submit an Annual Certification Form to NJDEP for their approval. This form requires that the Borough certify that all stormwater management facilities are being properly operated and maintained. To ensure this, Tinton Falls will require that all responsible parties submit annual statements documenting the operation and maintenance of their facilities. This will assist the Borough in completing the Annual Certification Form as well as provide documentation of all operations and maintenance not conducted by Borough personnel on stormwater management facilities. Should the responsible parties not submit annual statement, the Borough will assume responsibility for assessing the condition of the stormwater facilities and penalties may be assigned for noncompliance.

5.0 Stormwater Runoff Best Management Practices (BMPs)

It should be noted that although attempts to mimic pre-existing natural conditions may be adequate to satisfy the State stormwater rules, alteration of land always modifies hydrology.

5.1 Nonstructural BMPs/ Low Impact Development (LID)

With the increasing emphasis on nonpoint source pollution and concerns over the environmental impacts of land development, it has become necessary to develop effective alternatives to the centralized conveyance and treatment strategy that has been the basis for much of the historical stormwater management systems and programs in the State. New strategies must be developed to minimize and even prevent adverse stormwater runoff impacts from occurring and then to provide necessary treatment closer to the origin of those impacts. Such strategies, known collectively as Low Impact Development or LID, seek to reduce and/or prevent adverse runoff impacts through sound site planning and both nonstructural and structural techniques that preserve or closely mimic the site's natural or pre-developed hydrologic response to precipitation. Rather than responding to the rainfall-runoff process like centralized structural facilities, low impact development techniques interact with the process, controlling stormwater runoff and pollutants closer to the source and providing site design measures that can significantly reduce the overall impact of land development on stormwater runoff.

Any land area used as a non-structural stormwater management measure to meet the above identified design standards shall be dedicated to the Borough of Tinton Falls, Monmouth County, or the State, subjected to a conservation restriction filed with the County Clerk's office, or subject to NJDEP approved or equivalent restriction that ensures that measure or an equivalent stormwater management measure approved by the reviewing agency is maintained in perpetuity. Additionally, in general, all proposed stormwater management measures must avoid creating concentrated stormwater runoff

flows on habitat for threatened and endangered species as documented in the NJDEP's Landscape Project or Natural Heritage Database.

To the maximum extent practicable, the design standards identified in this plan shall be met by incorporating nonstructural stormwater management strategies into the design. The person(s) submitting an application for review shall identify the nonstructural strategies incorporated into the design of the project and shall complete a Low Impact Development Checklist as provided in the BMP Manual to be included in the application to the Borough for review. In accordance with the Stormwater Management Rules, nonstructural stormwater management strategies incorporated into site design shall:

1. Protect areas that provide water quality benefits and areas particularly susceptible to erosion and sediment loss;
2. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;
3. Maximize the protection of natural drainage features and vegetation;
4. Minimize the decrease in the "time of concentration" from pre-construction to post-construction.
5. Minimize land disturbance including clearing and grading;
6. Minimize soil compaction;
7. Provide low-maintenance landscaping that encourages precipitation retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;
8. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas; and
9. 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. These source controls include, but are not limited to:
 - i. Site design features that help to prevent accumulation of trash and debris in drainage systems;
 - ii. Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and
 - iii. When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the *Standards for Soil Erosion and Sediment Control in New Jersey*.

While the nonstructural stormwater management strategies listed above represent a wide range of both objectives and practices, the following strategies can be directly addressed through the use of specific nonstructural LID-BMPs that can be grouped into four general categories:

- Vegetation and Landscaping;
- Minimizing Site Disturbance;
- Impervious Area Management; and
- Time of Concentration Modifications.

Information on the specific nonstructural LID-BMPs recommended for each of these is presented below. Prior to utilizing any of the specific nonstructural LID-BMPs, applicants are urged to review the land development regulations of the municipality and/or agency from which they are seeking development approval. Engineers and site designers should recognize the importance of accurately computing existing or pre-developed runoff at a land development site. While this is an important computation at all development sites, it is particularly important at those sites where nonstructural LID-BMPs will be utilized. This is because, to a large degree, these nonstructural measures will utilize and/or mimic the pre-developed site's rainfall-runoff response. As such, accurate computation of pre-developed hydrologic conditions is vital to successful LID-BMP use. It is recommended that engineers and site designers consult with regulatory entities, such as the State, municipality, or local soil conservation district, regarding pre-developed hydrologic conditions. A pre-design meeting with the Borough Engineer or attendance at the Planning Board in concept stage may help to refine concepts before final design.

5.1.1 Vegetation and Landscaping Techniques

The following vegetation and landscaping nonstructural measures should be considered in land development proposed within the Borough.

- **Preservation of existing natural vegetated areas**

This should be considered throughout the design of a land development. There are several areas with significant hydrologic functions including forested areas, riparian corridors, and threatened and endangered species habitat that have been identified within the Borough limits. Close attention should be placed on the preservation of natural vegetation in these areas in particular. The maintenance responsibilities for this technique are minimal in that the area should be placed in an easement or deed restricted to ensure that the natural vegetation is not removed.

- **Native ground cover**

Areas covered with turf grass typically generate more runoff pollution than other types of vegetation. This is especially true when comparing grass areas with naturally wooded areas or forests. Therefore, the amount of lawns and other grass areas at land development sites should be minimized. Instead, alternative vegetation, particularly native plants, should be used to revegetate disturbed site areas. Native ground cover can create infiltration characteristics similar to those of natural areas. Naturally wooded areas or forests should also be restored or reestablished at land development sites where opportunity exists. The use of native plants decreases maintenance in the form of reduced mowing frequency and reduced use of fertilizers, when compared to turf grass.

- **Vegetative Filters/Buffers**

Native ground cover can provide a vegetated buffer to help filter stormwater runoff and provide locations for runoff from impervious areas to infiltrate. Water flowing as sheet flow across a vegetated area is slowed and filtered prior to infiltrating into the soil. Dense vegetative cover, long flow path lengths, and low surface slopes provide the most effective vegetated filters. Vegetative filters and buffers can be created by preserving existing vegetated areas over which runoff will flow or by planting new vegetation. Vegetative filters located immediately downstream of impervious surfaces such as roadways and parking lots can achieve pollutant removal, groundwater recharge, and runoff volume reduction. Vegetated buffers adjacent to streams, creeks, and other waterways and water bodies can also help mitigate thermal runoff impacts, maintain stream base flow, provide wildlife habitat, and increase site aesthetics. When upland woods are retained in their natural state, they break the force of falling rain. This prevents the soil from washing away and being carried into streams, wetlands, and potable water supply reservoirs. Wooded hillsides are especially critical in this regard. Removal of ground cover and topsoil during and after construction on steep slopes accelerates runoff and resulting erosion, impacting waters below.

The use of vegetative filters decreases the quantity of and therefore the maintenance and inspection requirements for structures such as curbs, stormwater collection systems – pipes, inlets, outfalls, etc. Vegetative filters should be cleaned out after large rainfall events and at least once (1) per year.

5.1.2 Minimizing Site Disturbance

- **Minimizing land disturbance**

Minimizing land disturbance at a development site is a nonstructural LID-BMP that can be used during all phases of a land development project. Additionally, minimizing land disturbance can help reduce post-development site runoff volumes and pollutant loads and maintain existing groundwater recharge rates and other hydrologic characteristics by preserving existing site areas. Minimum disturbance begins during the project's planning and design phases by fitting the development into the terrain, as opposed to changing the terrain to fit the development. Roadway and building patterns that match the existing land forms and limit the amount of required clearing and grading should be chosen. The applicant will ensure compliance by including these requirements in soil erosion and sediment control plans, construction plans, and contract documents.

5.1.3 Impervious Area Management

Reductions in impervious area translate into more surface storage, infiltration and groundwater recharge, less stormwater runoff, and reduced storm sewer construction,

maintenance, and repair costs. It is important to note that all reductions in the amount and dimensions of impervious surfaces at a land development site must also recognize safety and the level of use of the impervious surfaces. The following impervious area management techniques may be considered for major development projects proposed within the Borough.

- **Minimizing parking area and driveways**

Parking area and driveway requirements are mandated by the Borough Land Development Ordinances and, in the case of residential areas, the RSIS. The RSIS provides flexibility in selecting parking and driveway size, provided that supporting local data is available. A mix of residential and nonresidential uses at a development site can share parking areas, thereby reducing the total parking area and impervious cover.

- **Unconnected impervious areas**

This technique includes impervious surfaces that are not directly connected to a site's drainage system. Instead, runoff from an unconnected impervious area is allowed to sheet flow from the impervious area across a downstream pervious surface, where it has the opportunity to re-infiltrate into the soil, thereby reducing the total runoff volume. In most circumstances, impervious areas can be considered unconnected under the following conditions:

1. All runoff from the unconnected impervious area must be sheet flow.
2. Upon entering the downstream pervious area, all runoff must remain as sheet flow.
3. Flow from the impervious surface must enter the downstream pervious area as sheet flow or, in the case of roofs, from downspouts equipped with elongated splash pads, level spreaders, or dispersion trenches that reduce flow velocity and induce sheet flow in the downstream pervious area.
4. All discharges onto the downstream pervious surfaces must be stable and non-erosive.
5. The shape, slope, and vegetated cover in the downstream pervious area must be sufficient to maintain sheet flow throughout its length. Maximum slope of the downstream pervious area is 8 percent.
6. The maximum roof area that can be drained by a single downspout is 600 square feet.

- **Vegetated Roofs**

Vegetated roofs, also known as green roofs, are an innovative way to reduce impervious surfaces at development sites. A vegetated or green roof consists of a lightweight vegetated planting bed that is installed on a new or existing roof. Vegetated roofs can be implemented using specialized commercial products. It is

important to note that the structural integrity of the roof must be taken into consideration when designing a green roof. The Borough Building Code Officials must be consulted prior to use of this technique. Except for periodic limited or as needed fertilization and watering, a meadow-like planting of perennial plants can require minimal maintenance.

5.1.4 Time of Concentration (T_c) Modifications

Changes in peak flow result from changes in the Time of Concentration (T_c) from drainage areas, with longer times yielding smaller peak runoff rates and shorter times causing greater ones. Site factors that affect drainage area time of concentration include precipitation, flow length, flow regime, surface roughness, channel shape, and slope. Typically, land development modifies most of these factors in ways that cause the time of concentration of a drainage area to be shorter (and, therefore the peak runoff rates to be greater) after development than prior to development. However, during site design, it may be possible to minimize this decrease in time of concentration by controlling the various site factors that affect it. Considerations may be given for the factors presented below.

- **Surface roughness changes**

Based upon hydraulic theory, surface roughness coefficients used in sheet flow computations are based on the land cover of a drainage area, with areas of dense vegetation having generally higher coefficients (and longer times of concentration) than smoother surfaces such as paved or grassed areas. Site designers should preserve existing native vegetation or use native plants with varied topography to restore disturbed areas as discussed above in order to increase surface roughness and time of concentration, and consequently reduce the peak flows from a drainage area.

- **Slope reduction**

Ground slope is an important factor in determining drainage area time of concentration and peak discharge. Reducing slopes in graded areas can help minimize T_c reductions and peak flow increases. In addition, terraces and reduced slope channels with grade breaks can be constructed on a sloping area to provide additional travel time. Terraces can also be used to redirect runoff to flow along rather than across the slope, decreasing the slope and increasing the flow length and, subsequently, the time of concentration. Care should also be taken to ensure that the grading of vegetated areas is sufficient to allow for positive drainage as required by local or state regulations, particularly adjacent to buildings and other structures.

- **Vegetated conveyance**

The use of vegetated conveyance measures such as channels and swales can increase the surface roughness along the Tc flow path and increase the overall Tc. In addition, vegetated channels can provide opportunities for runoff treatment, runoff infiltration, and evapotranspiration. In designing vegetated conveyance measures, care should be taken to protect transitions to and from culverts from erosion caused by flow acceleration and turbulence. The vegetation must be tolerant of the hydrologic regime associated with the channel.

5.2 Structural Best Management Practices

As mentioned previously, wherever possible, all major development projects proposed in the Borough should utilize nonstructural stormwater management measures to meet the requirements of the Stormwater Management Rules. When structural measures are required, the following standards apply:

1. Structural stormwater management measures shall be designed to take into account the existing site conditions, including environmentally critical areas; wetlands; flood-prone areas; slopes; depth to seasonal high water table; soil type, permeability and texture; and drainage area and drainage patterns.
2. Structural stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning.
3. Structural stormwater management measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant.
4. Stormwater management basins shall be designed to meet the minimum safety standards for stormwater management basins at N.J.A.C. 7:8-6 and as identified below.
5. Stormwater management measure guidelines are available in the BMP Manual and as described below. 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, ground water recharge and water quality design and performance standards established by this subsection.
6. For all future proposed structural stormwater management measures, the Borough Engineer and director of public works must evaluate the ability to clean out the selected structural BMP(s); the expense of replacement equipment, safety, and training for the BMP(s); and the ease of access to maintain the structure(s).

The types of structural BMPs are identified in the BMP Manual; however, this plan details the recommended structural BMPs for use specifically in Tinton Falls. These include the following:

- **Bioretention system**

A bioretention system consists of a soil bed planted with native vegetation located above an underdrained sand layer. It can be configured as either a bioretention basin or a bioretention swale. Stormwater runoff entering the bioretention system is filtered first through the vegetation and then the sand/soil mixture before being conveyed downstream by the underdrain system. Runoff storage depths above the planting bed surface are typically shallow. **The adopted TSS removal rate for bioretention systems is 90 percent.** Bioretention systems can be used to filter runoff from both residential and nonresidential developments. Effective bioretention system performance requires regular and effective maintenance.

- **Constructed stormwater wetland**

Constructed stormwater wetlands are designed to maximize the removal of pollutants from stormwater runoff through settling and both uptake and filtering by vegetation. Constructed stormwater wetlands temporarily store runoff in relatively shallow pools that support conditions suitable for the growth of wetland plants. **The adopted TSS removal rate for constructed stormwater wetlands is 90 percent.** Constructed stormwater wetlands are used to remove a wide range of stormwater pollutants from land development sites as well as provide wildlife habitat and aesthetic features. The minimum drainage area to a constructed stormwater wetland is 10 acres to 25 acres, depending on the type of wetland. Constructed stormwater wetlands should not be located within natural wetland areas, since they will typically not have the same full range of ecological functions. It is important to note that a constructed stormwater wetland must be able to maintain its permanent pool level. Effective constructed stormwater wetland performance requires regular and effective maintenance.

- **Dry well**

A dry well is a subsurface storage facility that receives and temporarily stores stormwater runoff from roofs of structures. Discharge of this stored runoff from a dry well occurs through infiltration into the surrounding soils. A dry well may be either a structural chamber and/or an excavated pit filled with aggregate. Due to the relatively low level of expected pollutants in roof runoff, a dry well cannot be used to directly comply with the suspended solids and nutrient removal requirements contained in the NJDEP Stormwater Management Rules at N.J.A.C. 7:8. However, due to its storage capacity, a dry well may be used to reduce the total stormwater quality design storm runoff volume that a roof would ordinarily discharge to downstream stormwater management facilities. Dry wells can also be used to meet the groundwater recharge requirements of the NJDEP Stormwater Management Rules. The use of dry wells is applicable only where their subgrade soils have the required permeability rates and groundwater is not shallow. Effective dry well performance requires regular and effective maintenance.

- **Extended Detention Basin**

An extended detention basin is a facility constructed through filling to create a berm and/or excavation to form a hole that provides temporary storage of stormwater runoff. It has an outlet structure that detains and attenuates runoff inflows and somewhat promotes the settlement of pollutants. An extended detention basin is normally designed as a multistage facility that provides runoff storage and attenuation for both stormwater quality and quantity management. **The adopted TSS removal rate for extended detention basins is 40 to 60 percent, depending on the duration of detention time provided in the basin, which does not meet the requirements of the Stormwater Management Rules exclusively.** Extended detention basins can be used in part to address both the stormwater runoff quantity and quality impacts of land development. Extended detention basins are designed for complete evacuation of runoff and normally remain dry between storm events. Extended detention basins may be used at sites where significant increases in runoff are expected from site development. Extended detention basin performance requires regular and effective maintenance. All new stormwater management basins within the Borough must, at a minimum, include trash racks, overflow grates, and escape provisions at 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.

- **Manufactured Treatment Device**

A manufactured treatment device is a pre-fabricated stormwater treatment structure utilizing settling, filtration, absorptive/adsorptive materials, vortex separation, vegetative components, and/or other appropriate technology to remove pollutants from stormwater runoff. Manufactured treatment devices may be used to meet the requirements of the Stormwater Management Rules, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology (NJCAT) and certified by NJDEP. Other manufactured treatment devices not certified under the NJCAT program may be utilized if they are approved by NJDEP prior to their use. Other pollutants, such as nutrients, metals, hydrocarbons, and bacteria can be included in the verification/certification process if the data supports their removal efficiencies. Manufactured treatment devices are intended to capture sediments, metals, hydrocarbons, floatables, or other pollutants in stormwater runoff before being conveyed to a storm sewer system, additional stormwater quality treatment measure, or waterbody. A manufactured treatment device is adequate for small drainage areas that contain a predominance of impervious cover that is likely to contribute high hydrocarbon and sediment loadings, such as small parking lots and gas stations. For larger sites, multiple devices may be necessary. Devices are normally used for pretreatment of runoff before discharging to other, more effective stormwater quality treatment facilities. The Borough Engineer and Director of Public Works

must be consulted about each manufactured treatment device proposed and consideration should be given to maintenance, training, and future costs to the Borough before approval.

- **Pervious paving**

Pervious paving materials can be used at some site locations in the Borough to replace standard impervious pavement in parking lots and driveways in the Borough. For all sites where pervious paving is proposed, care should be taken in assessing soil conditions, high groundwater conditions, and potential sources of contamination. Further, it is recommended that some form of pre-treatment (i.e. filter strips) be utilized to minimize the chance of clogging the pervious paving. Careful consideration must be given to freezing weather and to drainage and flooding if clogging occurs. Effective pervious paving system performance requires regular and effective maintenance.

- **Sand filter**

A sand filter consists of a forebay and underdrained sand bed. It can be configured as either a surface or subsurface facility. Runoff entering the sand filter is conveyed first through the forebay, which removes trash, debris, and coarse sediment, and then through the sand bed to an outlet pipe. Sand filters use solids settling, filtering, and adsorption processes to reduce pollutant concentrations in stormwater. **The adopted TSS removal rate for sand filters is 80 percent.** Sand filters are normally used in highly impervious areas with relatively high TSS, heavy metal, and hydrocarbon loadings such as roads, driveways, drive-up lanes, parking lots, and urban areas.

- **Vegetative filter**

A structural vegetative filter strip can be employed using native ground cover or other vegetation to provide pollutant removal from stormwater runoff. A vegetative filter is an area designed to remove suspended solids and other pollutants from stormwater runoff flowing through a length of vegetation called a vegetated filter strip. The vegetation in a filter strip can range from turf and native grasses to herbaceous and woody vegetation, all of which can either be planted or indigenous. It is important to note that all runoff to a vegetated filter strip must both enter and flow through the strip as sheet flow. Failure to do so can severely reduce and even eliminate the filter strip's pollutant removal capabilities. The total suspended solid (TSS) removal rate for vegetative filters will depend upon the vegetated cover in the filter strip. Vegetated filter strips can be effective in reducing sediment and other solids and particulates, as well as associated pollutants such as hydrocarbons, heavy metals, and nutrients. Effective vegetated filter strip performance requires regular and effective maintenance.

- **Rain Barrel**

A rain barrel is a rainwater harvesting system that is connected to a down spout tube from a house or building and is a simple retrofit that a homeowner can perform. Rain barrels collect, store and divert rooftop runoff during a rain shower for use during dryer weather. Saving rainwater to use during the dry months using rain barrels is an ancient practice that is again becoming popular. A rain barrel is a perfect reservoir for watering landscapes and ornamental and vegetable gardens. All systems should use covered barrels or cisterns that keep the water from accumulating leaves (and going septic) and keep the standing water from encouraging mosquito breeding.

6.0 Mitigation Plans

A mitigation plan is provided for a proposed development when the applicant is granted a variance or exemption from the stormwater management design and performance standards. The project must provide additional groundwater recharge benefits, or protection from stormwater runoff quality and quantity from previously developed properties that do not currently meet the design and performance standards outlined in the Municipal Stormwater Management Plan. The developer must ensure the long-term maintenance requirements are met.

The Borough may allow a developer to provide funding or partial funding for an identified environmental enhancement project. The funding must be equal to or greater than the cost to implement the mitigation, including costs associated with purchasing the property or easement for mitigation, and with the long-term maintenance requirements of the mitigation measure.

Although the Borough has not yet refined the Mitigation Plan, certain sites may provide opportunities for upgrades of water quality treatment. It is anticipated that a majority of stormwater mitigation techniques would involve stream bank stabilization and erosion control, retrofitting existing municipal infrastructure, inclusive of storm drainage facilities and stormwater management facilities.

7.0 Stream Corridor Protection Plans

Stream Corridor Protection Plans will be developed for Category One (C-1) waters within the Borough's boundaries. A stream corridor is composed of several essential elements, the stream channel itself and the associated wetlands, flood plains and forests. These elements function as an integrated ecological and hydrologic system. Stream corridors are not static but dynamic in terms of function, structure and location.

The benefits of stream corridors for streams and the related ecological habitat are well researched and analyzed. Stream corridors, if maintained in their natural condition with minimum disturbance, are instrumental in performing the following functions:

1. The forests and wetlands within stream corridors provide a buffer against pollution impacts to the stream. The benefits of such buffers (a.k.a. filter strips or buffer strips) include:
 - (a) Removal of sediment and pollutants in overland flow by providing opportunities for filtration, deposition, infiltration, absorption, adsorption, decomposition and volatilization;
 - (b) Reduction of sheet, bank and streambed erosion by stabilization of the stream bank ground surface;
 - (c) Displacement of activities from the waters edge that represent potential sources of non-point source pollutant generation, spill accidents and illegal dumping;
 - (d) Shade surface waters so that waters are not excessively warmed.

There are several studies that have observed the efficiency of filter strips in controlling farming related pollutants being carried through runoff to streams. Filter strips have found to be effective in reducing the amount of solids and liquid nutrients originating through farming activities.

2. Maintain the genetic diversity within native plant and animal populations by providing a contiguous migration corridor, especially in urban areas where streams and associated forests are often the only suitable habitat areas remaining after urbanization. Stream Corridors also provide a source of food for the aquatic ecosystem. A large percentage of New Jersey's endangered species rely on stream corridors and wetlands for survival.
3. Wetland areas and floodplains help prevent flood related damage to surrounding communities by providing flood storage capacity in the Borough; help recharge ground water aquifers; and help maintain the surface water level of the stream channel during low rainfall periods.

The destruction or the improper use of one or more elements in a stream corridor can lead to the deterioration of the entire system and can result in significant regional environmental degradation. Problems could include water quality degradation, stream bank erosion, excessive sedimentation in streams and lakes, flooding and loss of wild life and plant habitat. The sensitivity of stream corridors to human interference is heightened when features such as steep slopes and highly erodible soils are present.

Adequate protection of stream corridors will eliminate some of these water quality problems by removing sediments, organic matter, and other pollutants from runoff and

waste water before entering stream, and displacing potential pollutants from the stream corridor.

Establishment of proper maintenance standards for stream corridors is critical. The effectiveness of stream corridors in buffering the streams to maintain water quality and performing other functions depends on the defined width for the stream corridor (the area encompassing the critical environmental components and a buffer) as well as the permitted uses within the corridor. Although a buffer strip is defined as an undisturbed naturally vegetated zone, the term "undisturbed" should not be taken in its most stringent definition.

8.0 Land Use/Build Out Analysis

The Borough of Tinton Falls is 15.15 square miles in overall size and, as based upon a preliminary vacant land analysis performed during the 2004 Cross-Acceptance III process, contains approximately 2000 acres of vacant land, representing slightly less than 20% of the total Borough land area.

Projections for population, employment and land development in the Borough of Tinton Falls through the year 2025 have been completed by the Monmouth County Planning Board and are included as an attachment herein.

The Monmouth County Planning Board is in the process of developing a build-out analysis for all municipalities in Monmouth County. The Borough will undertake further analysis of the existing land uses, zoning districts, and permitted density. The land uses for the Borough of Tinton Falls are shown in the mappings included in the Appendix.

In accordance with the NJDEP regulations, the Borough will complete its build-out analysis prior to February 2006. At that time, the Borough will readopt the MSWMP and amend it to include the build-out analysis element.

9.0 Plan Consistency and Recommended Stormwater Control Ordinances

The following goals have been identified and met as summarized below:

- **Reduce flood damage, including damage to life and property** – By requiring that all major development projects address stormwater quantity in accordance with the new Stormwater Management Rules and the requirements identified herein, the Borough should be able to reduce increased flood damage to a great extent. Further, the Borough will mandate mitigation measures for projects that cannot strictly comply with the Stormwater Rules or the Borough's ordinances for stormwater, retrofits to existing stormwater collection systems and stormwater quantity control devices can be employed to further reduce existing flood damage.

- **Minimize, to the extent practical, any increase in stormwater runoff from any new development** – By mandating the use of various nonstructural stormwater management techniques as discussed herein, the Borough shall minimize the increase in stormwater runoff from new development. Additionally, requiring projects to meet the stormwater runoff quantity control requirements of the new rules further decreases the potential for stormwater runoff concerns from new development projects in the Borough.
- **Reduce soil erosion from any development or construction project** – The Borough's Stormwater Management Plan identifies that the *Standards for Soil Erosion and Sediment Control in New Jersey* be followed for all major development projects. Further, the Borough will mandate mitigation measures for projects that cannot strictly comply with the Stormwater Rules or the Borough's ordinances for stormwater thus retrofits to existing stormwater management features can be employed to reduce erosion from existing development and redevelopment projects.
- **Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures** – The Borough has identified locations where storm sewers are inadequate. Stream bank instability areas have also been identified. These locations will likely be good candidates for the Mitigation Plan.
- **Maintain groundwater recharge** – By mandating that all major development projects complete Groundwater Recharge Spreadsheet analyses, it will be possible for the Borough to identify the pre-developed and post-developed groundwater recharge conditions. Through the use of BMPs for infiltration, the existing groundwater recharge conditions will be maintained post-development. The Borough will mandate mitigation measures to compensate for any shortfall due to thorough documented on-site limitations to recharge.
- **Prevent, to the greatest extent feasible, an increase in nonpoint pollution** – By strongly encouraging the use of LID and preservation, the Borough is working to minimize nonpoint pollution. Additionally, since the Borough is mandating that all major development projects meet a 80% Total Suspended Solids removal rate, nonpoint pollution is mitigated to an even greater extent. Further, the Borough will require mitigation measures for projects that cannot strictly comply with the Stormwater Rules or the Borough's ordinances for stormwater management. Retrofits to existing stormwater management features can be employed to reduce nonpoint pollution from existing development and redevelopment projects.
- **Maintain the integrity of stream channels for their biological functions, as well as for drainage** – The Borough intends to support the goals of the Special Protection Waters implementation through the administration of the Municipal Stormwater General Permit. By requiring vegetative buffer strips along all tributaries for sediment control, stream bank and streambed erosion control,

nutrient and pollutant removal, stream temperature control, protection of aquatic species, and wildlife habitat, the Borough will enhance this goal.

- **Minimize pollutants in stormwater runoff from new and existing development in order 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** - By mandating that all major development projects meet an 80% Total Suspended Solids removal rate, nonpoint pollution is mitigated to a greater extent. Further, the Borough will mandate mitigation measures for projects that cannot strictly comply with the Stormwater Rules or the Borough's ordinances for stormwater. Retrofits to existing stormwater management features can be employed to reduce nonpoint pollution from existing development and redevelopment projects.

As a Tier A Municipality, Tinton Falls is required to develop and implement a Local Public Education Program to educate residents and businesses about the impact of their activities on stormwater quality and on the steps they can take to lessen these impacts. The municipal education program will be conducted to satisfy at least the minimum standards and will include all of the SBA and/or BMP topics required.

The Local Public Education Program will include a storm drain inlet labeling project and will include the distribution of materials describing the hazards of dumping materials into storm drains and the labeling of all stormdrains along municipal streets with sidewalks and all storm drains within plazas, parking areas, and maintenance yards operated by the municipality.

Through these and other outreach efforts to residents, Tinton Falls will fulfill not only its Local Public Education requirements, but will also improve public awareness, promote better stormwater management practices, and encourage community involvement and environmental stewardship.

- **Protect public safety through the proper design and operation of stormwater management basins** – Public safety will be protected as the Borough is mandating all new stormwater management basins be designed in accordance with safety requirements of the Stormwater Management Rules.

Please note this part of the plan will be updated upon complete review for consistency with the Borough's Master Plan and Land Development Ordinance. Further updates to the Land Development Ordinance will include the introduction and adoption of the following ordinances:

- Stormwater Management Ordinance

- Pet Waste Ordinance
- Litter Control Ordinance
- Improper Disposal of Waste Ordinance
- Wildlife Feeding Ordinance
- Containerized Yard Waste Ordinance
- Yard Waste Collection Program Ordinance
- Illicit Connection Ordinance

Appendix A

NJPDES Tier A Municipal Stormwater General Permit



Bureau of Nonpoint Pollution Control
Division of Water Quality
PO Box 029
Trenton, NJ 08625-0029
Phone: (609) 633-7021
Fax: (609) 984-2147

AUTHORIZATION TO DISCHARGE R9 -Tier A Municipal Stormwater General Permit

Facility Name:

Tinton Falls Boro

PIID #: 167056

Facility Address:

556 Tinton Ave
Tinton Falls, NJ 07724-3298

NJPDES #: NJG0150070

Type of Activity: Stormwater Discharge General Permit Authorization New

Owner:

Tinton Falls Boro
556 Tinton Ave
Tinton Falls, NJ 07724-3298

Operating Entity:

Tinton Falls Boro
556 Tinton Ave
Tinton Falls, NJ 07724-3298

Issuance Date:

03/22/2004

Effective Date:

04/01/2004

Expiration Date:

02/28/2009

Your Request for Authorization under NJPDES General Permit No. NJ0141852 has been approved by the New Jersey Department of Environmental Protection.

A handwritten signature in black ink, appearing to read "Barry Chalofsky".

Date: 03/22/2004

Barry Chalofsky, P.P., Chief
Bureau of Nonpoint Pollution Control
Division of Water Quality
New Jersey Department of Environmental Protection

Tier A Municipal Stormwater General Permit (NJ0141852)

PART I NARRATIVE REQUIREMENTS:

A. Authorization Under this Permit

1. Permit Area

- a. This permit applies to all areas of the State of New Jersey.

2. Eligibility

- a. This permit may authorize all new and existing stormwater discharges to surface water and groundwater from small municipal separate storm sewer systems (MS4s) owned or operated by municipalities assigned to Tier A under N.J.A.C. 7:14A-25.3(a)1 (Tier A Municipalities), except as provided in A.5 below.

- b. On a case-by-case basis, the Department may use this permit to authorize new and existing stormwater discharges to surface water and groundwater from small MS4s (or portions of small MS4s) owned or operated by Tier B Municipalities. As used in this permit, the term "Tier A Municipality" includes Tier B Municipalities that seek or obtain authorization pursuant to this provision of this permit.

- c. After the Effective Date of Permit Authorization (EDPA), the permit authorizes the following new and existing non-stormwater discharges from small MS4s owned or operated by Tier A Municipalities:

- i. Water line flushing and discharges from potable water sources
- ii. Uncontaminated ground water (e.g., infiltration, crawl space or basement sump pumps, foundation or footing drains, rising ground waters)
- iii. Air conditioning condensate (excluding contact and non-contact cooling water)
- iv. Irrigation water (including landscape and lawn watering runoff)
- v. Flows from springs, riparian habitats and wetlands, water reservoir discharges and diverted stream flows
- vi. Residential car washing water, and residential swimming pool discharges
- vii. Sidewalk, driveway and street wash water
- viii. Flows from fire fighting activities
- ix. Flows from rinsing of the following equipment with clean water:
 - Beach maintenance equipment immediately following their use for their intended purposes; and
 - Equipment used in the application of salt and de-icing materials immediately following salt and de-icing material applications. Prior to

rinsing with clean water, all residual salt and de-icing materials must be removed from equipment and vehicles to the maximum extent practicable using dry cleaning methods (e.g., shoveling and sweeping). Recovered materials are to be returned to storage for reuse or properly discarded.

Rinsing of equipment in the above situations is limited to exterior, undercarriage, and exposed parts and does not apply to engines or other enclosed machinery.

d. If any of the discharges listed in 2.c above are identified by the municipality as a significant contributor of pollutants to or from the MS4, the Tier A Municipality must address the discharge as an illicit connection or as an improper disposal of waste as specified in Part I, Section F of this permit

3. Authorization

a. In order to obtain authorization under this permit (except for automatic renewal of authorization under A.4 below) a complete Request for Authorization (RFA) shall be submitted in accordance with the requirements of this permit. Upon review of the RFA, the Department may, in accordance with N.J.A.C. 7:14A-6.13, either:

- i. Issue notification of authorization under this permit, in which case, authorization is deemed effective the first day of the following month of the date of the notification of authorization;
- ii. Deny authorization under this permit and require submittal of an application for an individual permit; or
- iii. Deny authorization under this permit and require submittal of an RFA for another general permit.

b. For discharges from a small MS4 authorized by this permit, the Tier A Municipality is exempt from N.J.A.C. 7:14A-6.2(a)2. This exemption means that the discharge of any pollutant not specifically regulated in the NJPDES permit or listed and quantified in the NJPDES application or RFA shall not constitute a violation of the permit.

c. Authorization under this permit shall cease to be effective under N.J.A.C. 7:14A-6.13(f), (h), (j) and (o), where applicable.

4. Automatic Renewal of Authorization

a. Authorization under this permit will be automatically renewed when this general permit is reissued as provided by N.J.A.C. 7:14A-6.13(d)9 and 25.4(a)3 so long as the discharge authorized under the general permit continues to be eligible. The Department shall issue a notice of renewed authorization to the Tier A Municipality.

b. If the Tier A Municipality is aware of any information in the most recently submitted RFA that is no longer true, accurate, and/or complete, the Tier A Municipality shall provide the correct information to the Department within 90 days of the effective renewal authorization notice.

5. Stormwater Discharges Not Authorized

a. This permit does not authorize "stormwater discharge associated with industrial

activity” as defined in N.J.A.C. 7:14A-1.2. Types of facilities that a Tier A Municipality may operate and that are considered to be engaging in “industrial activity” include but are not limited to certain landfills and recycling facilities, certain transportation facilities (including certain local passenger transit and air transportation facilities), certain facilities handling domestic sewage or sewage sludge, steam electric power generating facilities, and construction activity that disturbs five acres or more (see N.J.A.C. 7:14A-1.2 for the full definition of “stormwater discharge associated with industrial activity”). Any municipality that operates an industrial facility with such a discharge must submit a separate request for authorization (RFA) or individual permit application for that discharge. An RFA submitted for the Tier A Municipal Stormwater General Permit does not qualify as an RFA for such a discharge.

- i. Deadlines to apply for a NJPDES permit for “stormwater discharge associated with industrial activity” are set forth in N.J.A.C. 7:14A-24.4(a)1. If such a discharge is from a facility (other than an airport, powerplant, or uncontrolled sanitary landfill) that is owned or operated by a municipality with a population of less than 100,000, the municipality shall submit the RFA or individual permit application by March 3, 2004. If such a discharge is from any other industrial facility, N.J.A.C. 7:14A-24.4(a)1 specifies earlier deadlines to apply.
- b. This permit does not authorize “stormwater discharge associated with small construction activity” as defined in N.J.A.C. 7:14A-1.2. In general, this is the discharge to surface water of stormwater from construction activity that disturbs at least one but less than five acres (see N.J.A.C. 7:14A-1.2 for the full definition). Any municipality that operates a construction site with such a discharge must submit a separate RFA or individual permit application for that discharge. An RFA submitted for the Tier A Municipal Stormwater General Permit does not qualify as an RFA for such a discharge.
- c. This permit does not authorize any stormwater discharge that is authorized under another NJPDES permit. A municipality does not have to implement measures contained in this NJPDES permit for stormwater discharges at facilities owned or operated by that municipality that are regulated under a separate NJPDES stormwater permit authorizing those discharges.
- d. This permit does not authorize stormwater discharges from projects or activities that conflict with an adopted areawide or Statewide WQM plan.

B. Requests for Authorization Requirements

1. Deadline for Requesting Authorization for an Existing Discharge

- a. An RFA for the existing discharges from the small MS4 owned or operated by a Tier A Municipality must be submitted to the Department on or before March 3, 2004, except as provided below.
 - i. If a municipality receives notice from the Department that it has been reassigned from Tier B to Tier A, or that a special designation is made under N.J.A.C. 7:14A-25.2(a)4, the deadline to submit an RFA is 180 days after the receipt of that notice, unless the Department approves a later date.
 - ii. The Department may, in its discretion, accept an RFA submitted after the

foregoing deadline; however, the municipality may still be held liable for violating the deadline to apply in accordance with N.J.A.C. 7:14A-25.4 and for discharging pollutants without a valid NJPDES permit in accordance with N.J.A.C. 7:14A-2.1(d).

2. Deadline for Requesting Authorization for a New Discharge

- a. An RFA for discharges from a new small MS4 owned or operated by a Tier A Municipality must be submitted to the Department at least ninety (90) days prior to the operation of the new MS4 system.
 - i. A Tier A Municipality that already has authorization to discharge from a small MS4 under the Tier A Municipal Stormwater Permit does not need to submit an additional RFA for the expansion of an existing small MS4.
 - ii. A new small MS4 is a small MS4 that did not exist on March 3, 2004 and results in a new discharge to surface or ground waters of the State.

3. Requesting Authorization

- a. A separate RFA shall be submitted by each Tier A Municipality applying for authorization under this permit.
- b. A single RFA is required for the entire stormwater discharge from the small MS4 owned or operated by and located within a single municipality. Multiple RFAs are not required for multiple municipal operations (e.g., municipally owned and operated maintenance facilities, garages, and/or offices).

4. Contents of the Request for Authorization

- a. A completed RFA shall include all of the following information regarding the Tier A Municipality and shall be completed using the Department's RFA form:
 - i. The name of the municipality that operates the small MS4, county it is located in, and the address of the main municipal office (e.g., city hall, town hall, or municipal building).
 - ii. The name and mailing address of the Municipal Stormwater Program Coordinator who will submit any reports or certifications required by the permit and to whom the Department shall send all correspondence concerning the permit.
 - iii. A certification acknowledging the best management practices and measurable goals specified in the permit.
 - iv. Additional information may be required by the Department to be included as part of the RFA if the Department determines that such additional information (including other data, reports, specifications, plans, permits, or other information) is reasonably necessary to determine whether to authorize the discharge under this permit.

5. Where to Submit

- a. A completed and signed RFA shall be submitted to the Department at the address specified on the Department's RFA form.

C. Definitions

1. The following definitions apply to this permit.

- a. "EDPA" means Effective Date of Permit Authorization.
- b. "Illicit connection" means any physical or non-physical connection that discharges the following to a municipal separate storm sewer system, unless that discharge is authorized under a NJPDES permit other than the NJPDES permit for discharges from that system (non-physical connections may include, but are not limited to, leaks, flows, or overflows into the municipal separate storm sewer system):
 - i. Domestic sewage;
 - ii. Non-contact cooling water, process wastewater, or other industrial waste (other than stormwater); or
 - iii. Any category of non-stormwater discharges that the Tier A Municipality identifies as a source or significant contributor of pollutants pursuant to 40 C.F.R. 122.34(b)(3)(iii).
- c. "MS4" means a municipal separate storm sewer system.
- d. "Municipality" means a "municipality" as defined in the Municipal Land Use Law at N.J.S.A. 40:55D-5, that is, any city, borough, town, township, or village.
- e. "Municipal separate storm sewer" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):
 - i. Owned or operated by the United States, an interstate agency, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface water or groundwater;
 - ii. Designed and used for collecting or conveying stormwater;
 - iii. Which is not a combined sewer;
 - iv. Which is not part of a POTW; and
 - v. Which is not either of the following:
 - A separate storm sewer(s) that is at an industrial facility, and that collects or conveys stormwater discharges associated with industrial activity that occurs at that facility; or
 - A separate storm sewer(s) that is at a construction site, and that collects or conveys stormwater discharges associated with small construction activity that occurs at that site.

- f. "Small municipal separate storm sewer system" or "small MS4" means all municipal separate storm sewers (other than "large" or "medium" municipal separate storm sewer systems as defined in N.J.A.C. 7:14A-1.2) that are:
- i. Owned or operated by municipalities described under N.J.A.C. 7:14A-25.1(b);
 - ii. Owned or operated by county, State, interstate, or Federal agencies, and located at public complexes as described under N.J.A.C. 7:14A-25.2(a)2; or
 - iii. Owned or operated by county, State, interstate, or Federal agencies, and located at highways and other thoroughfares as described under N.J.A.C. 7:14A-25.2(a)3; or
 - iv. Owned or operated by county, State, interstate, Federal, or other agencies, and receive special designation under N.J.A.C. 7:14A-25.2(a)4.
- g. "Solid and floatable materials" means sediment, debris, trash, and other floating, suspended, or settleable solids.
- h. "Stormwater" means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewerage or drainage facilities; or is conveyed by snow removal equipment.

D. Special Conditions

1. Sharing of Responsibilities

- a. A Tier A Municipality may rely on another governmental, private, or nonprofit entity (for example, a watershed association) to satisfy the municipality's NJPDES permit obligations to implement one or more control measures (or components (s) thereof) pursuant to N.J.A.C. 7:14A-25.7(a) if:
- i. The other entity, in fact, implements the measure(s), or component(s) thereof;
 - ii. The particular measure(s), or component(s) thereof, is at least as stringent as the corresponding NJPDES permit requirement;
 - iii. The other entity agrees in writing (or is required by law) to implement the measure(s), or component(s) thereof, on the Tier A Municipality's behalf. The municipality is responsible for compliance with this permit if the other entity fails to implement the measure(s), or component(s) thereof. In the annual reports the municipality must submit under Part I, Section H.3, the municipality shall specify that it is relying on another entity to satisfy some of the Tier A Municipality's NJPDES permit obligations.
 - iv. If the municipality is relying on another entity regulated under the NJPDES permit program to satisfy all of that Tier A Municipality's NJPDES permit obligations, including that municipality's obligation to file these annual reports, the municipality shall notify the Department of this reliance in writing, and shall also note this reliance in the municipality's SPPP.

E. Stormwater Program and Stormwater Pollution Prevention Plan

1. Stormwater Program

a. Tier A Municipalities are required to develop, implement, and enforce a stormwater program. This program shall be designed to reduce the discharge of pollutants from the municipality's small MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the Federal Act and the State Act by including the Statewide Basic Requirements (SBRs) set forth in Part I, Section F and any Additional Measures (AMs) required under Part I, Section G below. At the municipality's discretion, the stormwater program may also include Optional Measures (OMs) also in accordance with Part I, Section G below.

2. Stormwater Pollution Prevention Plan (SPPP)

a. Tier A Municipalities shall prepare and implement a written Stormwater Pollution Prevention Plan (SPPP) that describes the Tier A Municipality's stormwater program and serves as the mechanism for the implementation of the Statewide Basic Requirements. The SPPP must address stormwater quality issues related to new development, redevelopment and existing development. The SPPP shall be prepared and implemented in accordance with the deadlines specified in Part I, Section H. The SPPP shall include, at a minimum, all of the information and items identified in Attachment A.

i. The SPPP shall be signed, dated and retained by the Municipal Stormwater Program Coordinator.

b. For any projects or activities which the municipality contracts out to private contractors after the EDPA, the awarded contract must contain conditions that the contractor must conduct such projects or activities in such a manner that is in compliance with the municipality's SPPP and this permit's conditions. The municipality is responsible for any violations of this permit resulting from a contractor's noncompliance.

c. SPPPs may be amended so long as they continue to meet the requirements of this permit. Any amended SPPPs shall be signed, dated, implemented, retained, and otherwise treated in the same manner as the original SPPP. The Tier A Municipality shall retain each previous SPPP for a period of at least five years from the date of that previous SPPP. This period may be extended by written request of the Department at any time.

F. Statewide Basic Requirements (SBRs)

1. Stormwater quality issues related to new development, redevelopment and existing development are to be addressed through the implementation of the following Statewide Basic Requirements (SBRs). The permit specifies the BMPs that will be implemented for those SBRs. These SBRs and related BMPs are to be detailed in the municipality's SPPP.

a. Additional information is provided and each of the SBRs and related BMPs are described in more detail in the Department's Tier A Municipal Stormwater Permit Guidance Document.

2. Public Notice

- a. Minimum Standard - Tier A Municipalities shall comply with applicable State and local public notice requirements when providing for public participation in the development and implementation of the Tier A Municipality's stormwater program.
- b. Measurable Goal - Tier A Municipalities shall certify annually that all applicable State and local public notice requirements were followed.
- c. Implementation - Upon the effective date of permit authorization (EDPA).

3. Post-Construction Stormwater Management in New Development and Redevelopment

a. Minimum Standard - To prevent or minimize water quality impacts, the Tier A Municipality shall develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects (including projects operated by the municipality itself) that disturb one acre or more, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the municipality's small MS4. The municipality shall in its post-construction program:

- i. Adopt and reexamine a municipal stormwater management plan (or adopt amendments to an existing municipal stormwater management plan) in accordance with N.J.A.C. 7:8-4.
- ii. Adopt and implement a municipal stormwater control ordinance or ordinances in accordance with N.J.A.C. 7:8-4. The ordinance(s) will control stormwater from non-residential development and redevelopment projects.
- iii. Ensure that any residential development and redevelopment projects that are subject to the Residential Site Improvement Standards for stormwater management (N.J.A.C. 5:21-7) comply with those standards (including any exception, waiver, or special area standard that was approved under N.J.A.C. 5:21-3).
- iv. Where necessary to implement the municipal stormwater management plan, the municipal stormwater control ordinance(s) will also:
 - Control aspects of residential development and redevelopment projects that are not pre-empted by the Residential Site Improvement Standards; and
 - Set forth special area standards approved by the Site Improvement Advisory Board for residential development or redevelopment projects under N.J.A.C. 5:21-3.5.
- v. Ensure adequate long-term operation and maintenance of BMPs.
- vi. Enforce, through the stormwater control ordinance(s) or a separate ordinance, compliance with standards set forth in Attachment C of the permit to control passage of solid and floatable materials through storm drain inlets.
- vii. This post-construction program shall also require compliance with the applicable design and performance standards established under N.J.A.C. 7:8 for major development, unless:

- Those standards do not apply because of a variance or exemption granted under N.J.A.C. 7:8; or
- Alternative standards are applicable under an areawide or Statewide Water Quality Management Plan adopted in accordance with N.J.A.C. 7:15.

b. Measurable Goal – Tier A Municipalities shall certify annually that that they have developed, implemented, and are actively enforcing a program to address stormwater runoff from new development and redevelopment projects that discharge into the Tier A Municipality's small MS4 in accordance with the minimum standard.

c. Implementation

i. Upon the effective date of permit authorization, Tier A Municipalities shall for new development and redevelopment projects:

- Ensure that any residential development and redevelopment projects that are subject to the Residential Site Improvement Standards for stormwater management (N.J.A.C. 5:21-7) comply with those standards (including any exception, waiver, or special area standard that was approved under N.J.A.C. 5:21-3).
- Ensure adequate long-term operation and maintenance of BMPs on property owned or operated by the municipality.

ii. Within 12 months from the effective date of permit authorization, Tier A Municipalities shall:

- Adopt a municipal stormwater management plan (or adopt amendments to an existing municipal stormwater management plan) pursuant to the Stormwater Management Rules (N.J.A.C. 7:8-4);
- Comply with the standards set forth in Attachment C of the permit to control passage of solid and floatable materials through storm drain inlets for storm drain inlets the municipality installs within the Tier A Municipality's small MS4.

iii. Within 12 months from the adoption of the municipal stormwater management plan, Tier A Municipalities shall adopt a stormwater control ordinance(s) to implement that plan, and shall submit the adopted municipal stormwater management plan and ordinance(s) to the appropriate county review agency for approval.

iv. Tier A Municipalities shall enforce stormwater control ordinance(s) when approved in accordance with N.J.A.C. 7:8-4.

v. Within 24 months from the effective date of permit authorization Tier A Municipalities shall:

- Ensure adequate long-term operation and maintenance of BMPs on property not owned or operated by the municipality;
- Enforce, through the stormwater control ordinance(s) or a separate ordinance compliance with the standards set forth in Attachment C of the permit to control passage of solid and floatable materials through storm drain inlets for storm drain inlets not installed by the Tier A Municipality.

4. Local Public Education

a. Local Public Education Program

i. Minimum Standard – The Local Public Education Program shall describe how the Tier A Municipality will distribute educational information and specifics on how educational activities, including the educational event, will be conducted to satisfy this minimum standard. The following SBR and/or BMP topics shall be included in the Local Public Education Program:

- Stormwater/Nonpoint Source Education – impact of stormwater discharges on surface and ground waters of the State and steps that the public can take to reduce pollutants in stormwater runoff.
- Storm Drain Inlet Labeling – hazards of dumping materials into the storm drain, and fact that storm drains are usually connected to water bodies and do not receive treatment.
- Fertilizer/Pesticide Education – proper application, storage and disposal of pesticides and fertilizers, and the benefits of using native or well adapted vegetation that requires little or no fertilization.
- Waste Disposal Education – identification, proper handling and proper disposal of wastes (including the locations of hazardous waste collection facilities in the area) and the hazards associated with illicit connections and improper disposal of waste.
- Pet Waste Ordinance – information regarding the pet waste ordinance and the benefits of proper disposal of pet waste.
- Litter Ordinance - information regarding litter control and fines associated with littering
- Improper Disposal of Waste Ordinance - information regarding this ordinance.
- Wildlife Feeding Ordinance - information regarding the wildlife feeding prohibition.
- Yard Waste - information regarding home composting and yard waste recycling.

Tier A Municipalities shall provide for the duplication and annual mailing (or other means of delivery) to all residents and businesses within the municipality of the informational brochure provided by the Department. The informational

brochure covers all the topics above. The Department may periodically provide the Tier A Municipality with an updated brochure for duplication and distribution.

As part of this program, Tier A Municipalities shall also conduct each year, at minimum, one education effort in the form of an "event." An event may be an activity established primarily to satisfy this requirement or may be part of a bigger existing event such as municipal festivals, county fairs, or an Earth Day, Arbor Day or 4th of July celebration. During this event, the informational brochure shall also be made available to the public.

ii. Measurable Goal - Tier A Municipalities shall certify annually that they have met the Local Public Education Program minimum standard and shall provide the date(s) of the annual mailing (or other means of delivery) and annual event (including a description of the event).

iii. Implementation - Within 12 months from the effective date of permit authorization, Tier A Municipalities shall have developed and begun implementing the Local Public Education Program minimum standard.

b. Storm Drain Inlet Labeling

i. Minimum Standard - Tier A Municipalities shall establish a storm drain inlet labeling program and label all storm drain inlets that are along municipal streets with sidewalks, and all storm drain inlets within plazas, parking areas, or maintenance yards that are operated by the municipality. The program shall establish a schedule for labeling, develop a long term maintenance plan, and when possible, coordinate efforts with watershed groups and volunteer organizations.

ii. Measurable Goal - Tier A Municipalities shall certify annually that a storm drain inlet labeling program has been developed or is being implemented, and shall identify the number of storm drain inlets labeled within each year.

iii. Implementation - Within 12 months from the effective date of permit authorization, Tier A Municipalities shall develop an inlet labeling program for the storm drains identified in the minimum standard. Tier A Municipalities must either:

- Label a minimum of 50% of the storm drain inlets within 36 months from the EDPA; and label all remaining storm drain inlets on or before 60 months from EDPA; or
- Divide the municipality into two sectors for the purposes of storm drain inlet labeling and include a map of the two sectors in the SPPP. Label the storm drain inlets in one sector within 36 months from the EDPA; and label all remaining storm drain inlets on or before 60 months from EDPA.

5. Improper Disposal of Waste

a. Pet Waste Ordinance

- i. Minimum Standard - Tier A Municipalities shall adopt and enforce an ordinance that requires pet owners or their keepers to immediately and properly dispose of their pet's solid waste deposited on any property, public or private, not owned or possessed by that person. Information on the Pet Waste Ordinance and the benefits of proper disposal of pet solid waste shall be distributed with pet licenses.
- ii. Measurable Goal - Tier A Municipalities shall certify annually that they have met the Pet Waste Ordinance minimum standard.
- iii. Implementation - Within 18 months from the effective date of permit authorization, Tier A Municipalities shall have fully implemented the Pet Waste Ordinance minimum standard.

b. Litter Ordinance

- i. Minimum Standard - Tier A Municipalities shall adopt and enforce a litter ordinance or enforce the existing State litter statute (N.J.S.A 13:1E-99.3).
- ii. Measurable Goal - Tier A Municipalities shall certify annually that they have met the Litter Ordinance minimum standard.
- iii. Implementation - Within 18 months from the effective date of permit authorization, Tier A Municipalities shall have fully implemented the Litter Ordinance minimum standard.

c. Improper Disposal of Waste Ordinance

- i. Minimum Standard - Tier A Municipalities shall adopt and enforce an ordinance prohibiting the improper spilling, dumping, or disposal of materials other than stormwater into the small MS4 (excluding those authorized in Part I, Section A.2.c).
- ii. Measurable Goal - Tier A Municipalities shall certify annually that they have met the Improper Waste Disposal Ordinance minimum standard.
- iii. Implementation - Within 18 months from the effective date of permit authorization, Tier A Municipalities shall have fully implemented the Improper Disposal of Waste Ordinance minimum standard.

d. Wildlife Feeding Ordinance

- i. Minimum Standard - Tier A Municipalities shall adopt and enforce an ordinance that prohibits the feeding in any public park or on any other property owned or operated by the Tier A Municipality of any wildlife (excluding confined animals, for example, wildlife confined in zoos, parks, or rehabilitation centers or unconfined wildlife at environmental education centers).
- ii. Measurable Goal - Tier A Municipalities shall certify annually that they have met the Wildlife Feeding Ordinance minimum standard.
- iii. Implementation - Within 18 months from the effective date of permit

authorization, Tier A Municipalities shall have fully implemented the Wildlife Feeding Ordinance minimum standard.

e. Yard Waste Ordinance / Collection Program

i. Minimum Standard - Tier A Municipalities shall either adopt and enforce an ordinance that prohibits placing non-containerized yard wastes in the street or shall develop a yard waste collection and disposal program. The yard waste collection program shall include monthly yard waste pickups from October through December, once in the spring ("spring clean-up"), and on an "as-needed" basis for the rest of the year. The frequency of the "as needed" pickups shall be determined at the discretion of the Tier A Municipality. Any area, which the municipality determines to have no yard waste, will be exempt from the collections. The yard waste collection program shall also include the adoption and enforcement of an ordinance prohibiting all yard wastes from being placed at the curb or along the street more than seven (7) days prior to scheduled collection or the placing of yard waste closer than 10 feet from any storm sewer inlet along the street, unless they are bagged or otherwise containerized.

ii. Measurable Goal - Tier A Municipalities shall certify annually that they have met the Yard Waste minimum standard.

iii. Implementation - Within 18 months from the effective date of permit authorization, Tier A Municipalities shall have either developed and begun implementing a Yard Waste Collection Program or have fully implemented the Yard Waste Ordinance in accordance with the Yard Waste Ordinance / Collection Program minimum standard.

6. Illicit Connection Elimination and MS4 Outfall Pipe Mapping

a. Minimum Standard

i. Storm Sewer Outfall Pipe Mapping - Tier A Municipalities must develop a map showing the location of the end of all MS4 outfall pipes that are operated by the Tier A Municipality, and that discharge within the Tier A Municipality's jurisdiction to a surface water body (e.g., a lake, ocean, or stream including an intermittent stream). This map shall also show the location (and name, where known to the Tier A Municipality) of all surface water bodies receiving discharges from those outfall pipes. Each outfall pipe mapped shall be given an individual alphanumeric identifier, which shall be noted on the map. The outfall pipes shall be mapped on either a tax map prepared in accordance with Title 18, Chapter 23A of the New Jersey Administrative Code or on another map drawn to equal or larger (more detailed) scale. A municipality regulated under the Sewage Infrastructure Improvement Act (SIIA) regulations (N.J.A.C. 7:22A) may use a preliminary or final map prepared pursuant to those regulations. The Tier A Municipality shall submit a copy of its outfall pipe map to the Department upon request.

ii. Ordinance Prohibiting Illicit Connections - Each Tier A Municipality shall, to the extent allowable under State law, effectively prohibit through

ordinance, illicit connections to the Tier A Municipality's small MS4, and implement appropriate enforcement procedures and actions.

iii. Illicit Connection Elimination Program - Each Tier A Municipality must develop and implement a program to detect and eliminate illicit connections into the Tier A Municipality's small MS4. The program, at minimum, must include an initial physical inspection of all its outfall pipes. All outfall pipes that are found to have dry weather flow are to be further investigated.

The inspections of outfall pipes and investigations of dry weather flows are to be conducted in accordance with the procedures for detecting, investigating, and eliminating illicit connections contained in Attachment B of the permit. Results of the inspections of outfall pipes and dry weather flows are to be recorded on the Department's Illicit Connection Inspection Report form. Inspection reports for dry weather flows discovered as a result of initial physical inspections or as part of the ongoing program must be submitted to the Department with the annual certification. If the dry weather flow is intermittent the Tier A Municipality must perform, at minimum, three (3) additional investigations in an attempt to locate the illicit connection. If an illicit connection cannot be located or is found to emanate from another public entity, Tier A Municipalities must submit to the Department a written explanation detailing the results of the investigation and notify that public entity. The Department will determine if such measures were adequate and will notify the Tier A Municipality of the determination. All illicit connections found and subject to the ordinance prohibiting illicit connections must be eliminated within six (6) months of the discovery.

After the completion of the initial physical inspection of all outfall pipes, Tier A Municipalities must maintain an ongoing program to detect and eliminate illicit connections. The ongoing program will respond to complaints and reports of illicit connections, including those from operating entities of interconnected small MS4s, and continue to investigate dry weather flows discovered during routine inspections and maintenance of the small MS4.

b. Measurable Goal

i. Tier A Municipalities shall certify annually that an outfall pipe map has been completed or is being prepared in accordance with permit conditions and shall report the number of outfall pipes mapped within the year being reported and the total number of outfall pipes mapped to date.

ii. Tier A Municipalities shall submit an annual certification to the Department certifying that an ordinance prohibiting illicit connections is in place and is being actively enforced.

iii. Tier A Municipalities shall certify annually that an illicit connection elimination program has been developed in accordance with permit conditions to detect and eliminate illicit connections into the Tier A Municipalities' small MS4. Annual certifications shall also include the number of outfalls physically inspected, the number of outfalls found to have dry weather flow, the number of

illicit connections found and the number of illicit connections eliminated. Copies of inspection reports shall be submitted with the annual certification for those outfalls found to have dry weather flow.

c. Implementation

i. Storm Sewer Outfall Pipe Mapping – Tier A Municipalities shall divide the municipality into two (2) sectors for the purposes of outfall mapping. A diagram of the municipality showing the two (2) sectors shall be part of the Tier A Municipality's SPPP. Tier A Municipalities shall map the location of the end of small MS4 outfall pipes in one sector 36 months from the EDPA; and map the location of the end of all small MS4 outfall pipes on or before 60 months from the EDPA.

ii. Ordinance Prohibiting Illicit Connections - Within 18 months from the EDPA, Tier A Municipalities shall effectively prohibit through ordinance, illicit connections to the Tier A Municipality's small MS4, and implement appropriate enforcement procedures and actions.

iii. Illicit Connection Elimination Program - Within 18 months from the effective date of permit authorization, Tier A Municipalities shall have developed and begun implementing a program to detect and eliminate illicit connections into the Tier A Municipality's small MS4. Tier A Municipalities shall perform an initial physical inspection of all outfall pipes using the Department's Illicit Connection Inspection Report form within 60 months from the EDPA.

7. Solids and Floatable Controls

a. Street Sweeping

i. Minimum Standard - Tier A Municipalities shall sweep all municipally owned or operated curbed streets (including roads or highways) with storm drains that have a posted speed limit of 35 mph or less (excluding all entrance and exit ramps) in predominantly commercial areas at a minimum of once per month, weather and street surface conditions permitting.

ii. Measurable Goal - Tier A Municipalities shall certify annually that they have met the Street Sweeping minimum standard. Tier A Municipalities must maintain records including the date and areas swept, number of miles of streets swept and the total amount of materials collected. Information shall be reported to the Department in the annual report and certification.

iii. Implementation - Beginning 12 months after the effective date of permit authorization Tier A Municipalities shall have developed and begun implementing a street sweeping program that meets the minimum standard above.

b. Storm Drain Inlets

i. Minimum Standard - Retrofitting of existing storm drain inlets to meet the standard contained in Attachment C of the permit is required where such inlets are in direct contact with repaving, repairing (excluding repair of

individual potholes), reconstruction or alterations of facilities owned or operated by the Tier A Municipality. For exemptions to this standard, refer to "Exemptions" in Attachment C.

ii. Measurable Goal – Tier A Municipalities shall certify annually that such storm drain inlets have been retrofitted to meet the minimum standard contained in Attachment C, unless otherwise exempted.

iii. Implementation - Within 12 months of effective date of permit authorization and thereafter, Tier A Municipalities shall retrofit all such storm drain inlets in accordance with the Storm Drainage Inlets minimum standard.

c. Stormwater Facility Maintenance

i. Minimum Standard - Tier A Municipalities shall develop and implement a stormwater facility maintenance program for cleaning and maintenance of all stormwater facilities operated by the Tier A Municipality. Stormwater facilities include, but are not limited to: catch basins, detention basins, filter strips, riparian buffers, infiltration trenches, sand filters, constructed wetlands, wet basins, bioretention systems, low flow bypasses, and stormwater conveyances. The stormwater facility maintenance must be performed as required to ensure the proper function and operation of the stormwater facility. Tier A Municipalities shall also clean all catch basins annually to remove accumulated sediment, trash and debris.

ii. Measurable Goal - Tier A Municipalities shall certify annually that all stormwater facilities are properly functioning and that all catch basins have been cleaned in accordance with the minimum standard. If stormwater facilities were found not to be functioning properly and repairs were not made, a schedule for such repairs shall be included in the annual report and certification. Tier A Municipalities shall also maintain records of inspections, maintenance and repairs that were performed which shall be reported in the annual report and certification.

iii. Implementation - Within 12 months from the effective date of permit authorization, Tier A Municipalities shall have developed and begun implementing a stormwater facility maintenance program in accordance with the minimum standard.

d. Road Erosion Control Maintenance

i. Minimum Standard - Tier A Municipalities shall develop a roadside erosion control maintenance program to identify and repair erosion along streets (including roads or highways) operated by the municipality. Tier A Municipalities are also required to regularly inspect and maintain the stability of shoulders, embankments, ditches and soils along these streets to ensure that they are not eroding and contributing to sedimentation of receiving waters. Repairs shall be made in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey (N.J.A.C. 2:90-1).

ii. Measurable Goal - Tier A Municipalities shall certify annually that they have developed and are implementing a Roadside Erosion Control Maintenance

program. The certification shall also indicate the locations of all problem areas corrected and any maintenance done during that year. The dates of all inspections and employee training sessions shall also be reported in the annual report and certification.

iii. Implementation - Within 18 months from the effective date of permit authorization, Tier A Municipalities shall have developed and begun implementing a roadside erosion control maintenance program in accordance with the minimum standard.

e. Outfall Pipe Stream Scouring Remediation

i. Minimum Standard - Tier A Municipalities shall develop and implement a stormwater outfall pipe scouring detection, remediation and maintenance program to detect and control localized stream and stream bank scouring in the vicinity of outfall pipes operated by the municipality. This program shall identify all areas where localized stream and bank scouring occurs as a result of stormwater discharges from the Tier A Municipality's MS4. These areas shall then be prioritized and repairs shall be scheduled and completed. Repairs shall be made in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey at N.J.A.C. 2:90-1 (e.g., Conduit Outlet Protection 12-1).

ii. Measurable Goal - Tier A Municipalities shall certify annually that they have met the Outfall Pipe Stream Scouring Remediation minimum standard. In addition, the Tier A Municipality shall list the location of outfall scouring identified, the dates control measures are to begin, and the dates any control measures were completed.

iii. Implementation - Within 18 months of the effective date of permit authorization, Tier A Municipalities shall have developed and begun implementing an outfall pipe stream scouring detection, remediation and maintenance program. This program shall identify and prioritize all stormwater outfall pipes needing repairs, and then schedule and complete the repairs.

8. Maintenance Yard Operations (including maintenance activities at Ancillary Operations)

a. De-icing Material Storage

i. Minimum Standard - Tier A Municipalities must construct a permanent structure (a permanent building or permanent structure that is anchored to a permanent foundation with an impermeable floor, and that is completely roofed and walled) for the storage of salt, and other de-icing materials. Once completed, Tier A Municipalities shall perform regular maintenance and inspections of the permanent structure. Seasonal tarping shall be used as an interim BMP until the permanent structure is completed. Sand may be stored outside and uncovered if a 50-foot setback is maintained from storm sewer inlets, ditches or other stormwater conveyance channels, and surface water bodies.

ii. Measurable Goal - Tier A Municipalities shall certify annually that they have met the De-icing Material Storage minimum standard.

iii. Implementation - Within 12 months from the effective date of permit authorization, Tier A Municipalities shall implement the interim seasonal tarping BMP. Within 12 months of the effective date of permit authorization, Tier A Municipalities will comply with the 50-foot buffer requirement for the outside storage of sand. Within 36 months from the effective date of permit authorization Tier A Municipalities shall store all salt and de-icing materials in a permanent structure.

b. Fueling Operations

i. Minimum Standard - Tier A Municipalities must develop and implement standard operating procedures for vehicle fueling, and receiving of bulk fuel deliveries at maintenance yard operations. The standard operating procedures shall incorporate the required practices listed in Attachment D.

ii. Measurable Goal - Tier A Municipalities must certify annually that there is a vehicle fueling and bulk receiving standard operating procedures in place.

iii. Implementation - Within 12 months of the effective date of permit authorization, Tier A Municipalities shall have developed and begun implementing the required standard operating procedures for fueling operations.

c. Vehicle Maintenance

i. Minimum Standard - Tier A Municipalities shall develop and implement a standard operating procedure (SOP) for vehicle maintenance and repair activities that occur at municipal maintenance yard operations. The SOP shall include the required practices listed in Attachment D. The SOP shall include regular inspections of all maintenance areas and activities.

ii. Measurable Goal - Tier A Municipalities must certify annually that there is a vehicle maintenance standard operating procedure in place and that regular inspections and maintenance are being performed.

iii. Implementation - Within 12 months of the effective date of permit authorization, Tier A Municipalities shall have developed and begun implementing the required standard operating procedures for Vehicle Maintenance.

d. Good Housekeeping Practices

i. Minimum Standard - Tier A Municipalities must implement good housekeeping procedures for all materials or machinery listed in the Inventory Requirements for Municipal Maintenance Yard Operations prepared in accordance with Attachment D. These good housekeeping procedures include, but not limited to, the required practices listed in Attachment D at all municipal maintenance yard operations (including maintenance operations at ancillary operations).

ii. Measurable Goal - Tier A Municipalities must certify annually that they have met the Good Housekeeping Practices minimum standard.

iii. Implementation - Within 12 months of the effective date of permit authorization, Tier A Municipalities shall have developed and begun

implementing the required standard operating procedures for Good Housekeeping.

9. Employee Training

a. Minimum Standard - Tier A Municipalities shall develop and conduct an annual employee training program for appropriate employees on appropriate topics. At a minimum, annual employee training will include the following topics:

- i. Waste Disposal Education – Training shall include how to respond to inquires regarding proper waste disposal.
- ii. Municipal Ordinances – Training shall include an overview of the Pet Waste Ordinance, Litter Ordinance, Illicit Connection Ordinance and Improper Waste Disposal Ordinance, Wildlife Feeding Ordinance, and Yard Waste Ordinance (if applicable), their requirements, enforcement policy, and hazards associated with improper waste disposal.
- iii. Yard Waste Collection Program (if applicable) – Training shall include frequency of yard waste pickups and schedule, policy for when yard waste can be placed curbside, and alternatives such as composting and recycling.
- iv. Illicit Connection Elimination and Outfall Pipe Mapping – Training shall include information regarding the hazards associated with illicit connections and details of the program including investigation techniques, physical observations, field sampling, and mapping procedures.
- v. Street Sweeping – Training shall include sweeping schedules and record keeping requirements.
- vi. Stormwater Facility Maintenance - Training shall include catch basin cleaning schedules and record keeping requirements.
- vii. Road Erosion Control and Outfall Pipe Stream Scouring Remediation – Training shall include identifying road erosion and outfall pipe scouring and repairs.
- viii. Maintenance Yard Operations (including Ancillary Operations) – Training shall include de-icing material storage, fueling, vehicle maintenance, equipment/vehicle washing and good housekeeping SOPs.
- ix. Construction Activity / Post-Construction Stormwater Management in New Development and Redevelopment – Training shall include information regarding the requirement to obtain a NJPDES construction activity stormwater permit (see Part I, Section A.5.a and A.5.b of this permit) and requirements for Post-Construction Stormwater Management in New Development and Redevelopment (See Part I, Section F.3 of this permit) for the permittee's own construction activities and projects that disturb one acre or more.

b. Measurable Goal - Tier A Municipalities must certify annually the date of the annual employee training.

c. Implementation – Training shall begin 12 months from the effective date of permit authorization.

10. Construction Site Stormwater Runoff Control

a. Pursuant to N.J.A.C. 7:14A-25.6(b)2 and 25.7(b), the Department is responsible for developing, implementing, and enforcing a NJPDES permit program to reduce pollutants in stormwater runoff to small MS4s from construction activities. The Tier A Municipality is not required to include this SBR in its stormwater program or discuss this SBR in its SPPP.

G. Additional Measures and Optional Measures

1. Additional Measures

a. Additional Measures (AMs) are non-numeric or numeric effluent limitations that are expressly required to be included in the stormwater program by an adopted areawide or Statewide Water Quality Management Plan (WQM plan). AMs may modify or be in addition to SBRs: AMs may be required by a TMDL approved or established by USEPA, a regional stormwater management plan, or other elements of adopted areawide or Statewide WQM plans.

b. The Department will provide written notice of the adoption of an AM to each Tier A Municipality whose stormwater program will be affected, and will list each adopted AM in the permit by making a minor modification to the permit. The AMs, other than numeric effluent limitations, will specify the BMPs that must be implemented and the measurable goals for each BMP. The AMs will also specify time periods for implementation.

2. Optional Measures

a. At the Tier A Municipality's discretion, the stormwater program may also include Optional Measures (OMs), which are BMPs that are not implemented for SBRs or AMs but that prevent or reduce the pollution of the waters of the State.

H. Deadlines and Certifications

1. Stormwater Pollution Prevention Plan

a. Within twelve (12) months from the effective date of permit authorization, the Tier A Municipality shall prepare an SPPP.

b. The SPPP shall include, at a minimum, all of the information and items identified in Attachment A. The SPPP shall be signed, dated and retained by the Tier A Municipality.

2. Statewide Basic Requirements

a. Each SBR contained in Part I, Section F of the permit has a specific implementation schedule based on the effective date of permit authorization. Each SBR shall be implemented in accordance with that schedule. Tier A Municipalities shall certify in the Annual Report and Certification the status of the implementation of each SBR and the date implementation was completed, as appropriate.

i. The Department may grant a six-month extension to the deadlines contained in an implementation schedule for any of the SBRs if the Tier A Municipality submits a written request for such extension, at least 30 days prior to the deadline, establishing to the Department's satisfaction that the Federal,

State and local permits and approvals necessary for the construction of best management practices could not with due diligence be obtained within the time period set forth in Section F above. The written request shall be submitted to:

NJDEP
Division of Water Quality
Bureau of Nonpoint Pollution Control
Municipal Stormwater Regulation Program
P.O. Box 029
Trenton, NJ 08625-0029

3. Annual Report and Certification

- a. Tier A Municipalities shall complete an Annual Report (on a form provided by the Department) summarizing the status of compliance with this permit including measurable goals and the status of the implementation of each SBR contained in Part I, Section F of the permit. This report shall include a certification that the municipality is in compliance with its stormwater program, SPPP and this permit, except for any incidents of noncompliance. Any incidents of noncompliance with permit conditions shall be identified in the Annual Report and Certification. A copy of each Annual Report and Certification shall be kept at a central location and shall be made available to the Department for inspection.
 - i. If there are incidents of noncompliance, the report shall identify the steps being taken to remedy the noncompliance and to prevent such incidents from recurring.
 - ii. The Annual Report and Certification shall be signed and dated by the Tier A Municipality, and shall be maintained for a period of at least five years. This period may be extended by written request of the Department at any time.
- b. The Annual Report and Certification shall be submitted to the Department pursuant to the following submittal schedule:
 - i. Submit an Annual Report and Certification: on or before May 2, 2005 and every 12 months thereafter.

I. Standard Conditions

1. The following general conditions are incorporated by reference. The Tier A Municipality is required to comply with the regulations, which were in effect as of March 2, 2004.

- a. General Permits N.J.A.C. 7:14A-6.13
- b. Penalties for Violations N.J.A.C. 7:14-8.1 et seq.
- c. Incorporation by Reference N.J.A.C. 7:14A-2.3
- d. Toxic Pollutants N.J.A.C. 7:14A-6.2(a)4i
- e. Duty to Comply N.J.A.C. 7:14A-6.2(a)1 & 4
- f. Duty to Mitigate N.J.A.C. 7:14A-6.2(a)5 & 11
- g. Inspection and Entry N.J.A.C. 7:14A-2.11(e)
- h. Enforcement Action N.J.A.C. 7:14A-2.9
- i. Duty to Reapply N.J.A.C. 7:14A-4.2(e)3
- j. Signatory Requirements for Applications and Reports N.J.A.C. 7:14A-4.9

Attachment A

CONTENTS OF THE STORMWATER POLLUTION PREVENTION PLAN

A. SPPP Team

1. The Stormwater Pollution Prevention Plan (SPPP) shall identify the person or persons responsible for implementing or coordinating the SPPP activities (including at the Tier A Municipality's discretion, OMs).

B. Description of Required Best Management Practices

1. The SPPP shall identify and discuss each Statewide Basic Requirement (SBR) and best management practice (BMP) required by the Tier A Municipal Stormwater General Permit.
2. The SPPP shall identify and discuss each Additional Measure (AM), if any, required by the Tier A Municipal Stormwater General Permit.
3. The SPPP shall identify and discuss any Optional Measures (OMs) the Tier A Municipality chooses to include in its stormwater program.
4. For each SBR, AM, or OM included in the Tier A Municipality's stormwater program, the SPPP shall:
 - a. Describe the method of implementation;
 - b. Include detailed record keeping, as appropriate or as required;
 - c. Include an implementation schedule consistent with permit requirements, including interim milestones;
 - d. Include any special diagrams required by the permit (i.e., Storm Drain Inlet Labeling and Illicit Connection Elimination and MS4 Outfall Pipe Mapping);
 - e. Sharing responsibilities (If the Tier A Municipality wants to share responsibilities for implementing one or more control measures (other than OMs) with one or more other entities pursuant to N.J.A.C. 7:14A-25.7(a), the SPPP must describe which measure(s) the Tier A Municipality will implement, and identify the entity(ies) that will implement the other measure(s));
 - f. Include maintenance schedules, as appropriate; and
 - g. Include inspection schedules, as appropriate.

C. Identifying Areas Served by Combined Sewer

1. Tier A Municipalities that want to exclude any "combined sewer area" from the stormwater program must include a map showing the boundaries of the combined sewer area. A "combined sewer area" is an area that is excluded because all stormwater from that area (and operated by the municipality) is discharged to combined (or sanitary) sewer systems.

Attachment B

PROCEDURES FOR DETECTING, INVESTIGATING, AND ELIMINATING ILLICIT CONNECTIONS

Detection

An illicit connection for the purposes of this permit, is any physical or non-physical connection that discharges domestic sewage, non-contact cooling water, process wastewater, or other industrial waste (other than stormwater) to the Tier A Municipality's small MS4, unless that discharge is authorized under a NJPDES permit other than this Tier A Municipal Stormwater General Permit (non-physical connections may include, but are not limited to, leaks, flows, or overflows into the municipal separate storm sewer system). An illicit connection is also any category of non-stormwater discharges that a Tier A Municipality identifies as a source or significant contributor of pollutants pursuant to 40 C.F.R. 122.34(b)(3)(iii).

MS4 outfall pipes, for the most part, should not be discharging during substantial dry periods (72 hours after a rain event). Such flow is frequently referred to as "dry weather flow", which may be the result of an illicit connection. All dry weather flows are generally non-stormwater discharges, however not all dry weather flows are illicit connections. Some non-stormwater flows result from the improper disposal of waste (e.g., radiator flushing, engine degreasing, improper disposal of oil) and some may be the result of allowable discharges such as residential car washing, irrigation runoff, permitted (NJPDES) discharges and natural waters (e.g., spring water and groundwater infiltration). By using the Department's Illicit Connection Inspection Report form and making physical observations, a Tier A Municipality will compile information that will help determine if the dry weather flow is an illicit connection and the most likely source of the illicit connection. After making these physical observations, additional chemical field testing will enable a Tier A Municipality to further narrow the potential source(s) of the illicit connection.

The first physical observation is to observe if there is a dry weather flow. Some dry weather discharges are continuously flowing and some are intermittent. Observations will allow the Tier A Municipality to establish with reasonable certainty if there is an intermittent flow. If there are indications of intermittent flows (staining, odors, deterioration of outfall structure) follow-up investigations are required (see Investigation section). An estimate of the flow rate of the discharge shall also be noted (flow rate can be estimated by various methods, including timing how long it takes to fill a container of a known size). Additional physical observations and measurements shall be made for odor, color, turbidity, floatable matter, temperature, deposits and stains, vegetation and algal growth and condition of outfall structure (see Illicit Connection Inspection Report form). Information compiled from physical observations and field monitoring should be used to help identify potential sources. These observations are very important since they are the simplest method of identifying grossly contaminated dry weather flows. If physical observations alone are sufficient to warrant further investigation, then field testing is not required.

If a dry weather flow exists, and after making all physical observations (unless physical observations are enough to warrant further investigation), the Tier Municipality shall field test for surfactants (detergents). If these flows contain surfactants in excess of the detection limit, Tier A Municipalities shall field test for ammonia (as N) and potassium to help distinguish sanitary wastewater sources from other non-stormwater flows that contain detergents. Non-stormwater

discharges that are absent of surfactants shall be tested for fluoride to help distinguish potable from non-potable sources. Municipalities should refer to the Tier A Stormwater General Permit Guidance Manual for assistance and interpretation of field testing results.

All of the tests for the tracing of illicit connections may be performed in the field by employees of the Tier A Municipality or may be contracted out. Lab certification for those parameters is **not** required, however all person(s) responsible for calibrating, maintaining, and taking field samples shall be trained in the use of the equipment and appropriate field testing protocol.

Investigation

Any storm sewer outfall pipe found during the initial inspection or on any subsequent inspection to have a non-stormwater discharge or indications of an intermittent non-stormwater discharge requires further investigation by the Tier A Municipality to identify and locate the specific source. Non-stormwater discharges suspected of being sanitary sewage and/or significantly contaminated shall be prioritized and investigated first. Investigations of non-stormwater discharges suspected of being cooling water, washwater, or natural flows may be delayed until after all suspected sanitary sewage and/or significantly contaminated discharges have been investigated, eliminated and/or resolved.

Dry weather flows believed to be an immediate threat to human health or the environment shall be reported immediately to the Department's Action Hotline at 1-877-WARNDEP (1-877-927-6337).

Physical observations and field testing can help narrow the identification of potential sources of a non-stormwater discharge. However it is unlikely that either will pinpoint the exact source. Therefore, Tier A Municipalities will need to perform investigations "upstream" to identify illicit connections to systems with identified problem outfalls.

All non-stormwater discharges, whether continuous or intermittent must be investigated by the Tier A Municipality. All investigations must be resolved. If the source is found to be a non-stormwater discharge authorized under Part I, Section A.2.c of the permit, no further action is required. If a non-stormwater discharge is found but no source is able to be located within six (6) months of beginning the investigation, then the Tier A Municipality shall submit to the Department a Closeout Investigation form to close out the investigation. The Tier A Municipality must document that a good faith effort was made to find the source of the dry weather discharge and document each phase of the investigation. If the observed discharge is intermittent the Tier A Municipality must document, in the Illicit Connection Inspection Report form, that a minimum three (3) separate investigations were made to observe the discharge when it is flowing. If these attempts are unsuccessful, the Tier A Municipality shall submit to the Department the Closeout Investigation form noted above. However, since this is an ongoing program, the Tier A municipality should periodically recheck these suspected intermittent discharges.

Elimination

Non-stormwater discharges traced to their source and found to be illicit connections subject to the ordinance prohibiting illicit connections shall be eliminated. At the time the illicit connection is detected the responsible party shall be cited for violation of the municipal ordinance prohibiting

illicit connections and given thirty (30) days to cease the non-stormwater discharge. The responsible party may apply for a NJPDES permit for the discharge, but the discharge shall be ceased until a valid NJPDES permit has been issued by the Department. Tier A Municipalities are required to verify that the illicit discharge was eliminated by the responsible party within the specified timeframe and ensure that measures taken to eliminate the discharge are permanent and are not done in such a manner that would allow easy reconnection to the MS4.

When a responsible party fails to eliminate the discharge, Tier A Municipalities shall take the necessary steps to enforce their ordinance, including court action. In such instances the Department shall be notified by written correspondence so it is aware of any pending action and is able to provide assistance if needed.

If an illicit connection cannot be located or is found to emanate from another public entity, Tier A Municipalities must submit to the Department a written explanation detailing the results of the investigation and notify that public entity.

Attachment C

DESIGN STANDARD - STORM DRAIN INLETS

This standard applies to storm drain inlets installed as part of new development and redevelopment projects (public or private) that disturb one acre or more. In addition, retrofitting of existing storm drain inlets to this standard is required where such inlets are in direct contact with repaving, repairing (excluding repair of individual potholes), reconstruction or alterations of facilities owned or operated by the Tier A Municipality. For exemptions to this standard see "Exemptions" below.

Grates in Pavement or Other Ground Surfaces

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).
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.

(In regard to whether the different grate must also be bicycle safe, the Residential Site Improvement Standards include requirements for bicycle-safe grates.)

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.

Curb-Opening Inlets (Including Curb-Opening Inlets in Combination Inlets)

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.

Exemptions

Retrofitting Exemptions

1. Repaving, repairing, reconstruction or alterations projects that began construction prior to March 3, 2004, and projects that were awarded bid prior to March 3, 2004, are exempted from the storm drain inlet design standard.
2. Existing curb-opening inlets do not need to be retrofitted to meet the design standard if each individual clear space in the curb opening has an area of no more than nine (9.0) square inches.

Hydraulic Performance Exemptions

1. New Development and Redevelopment Projects - 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. Retrofitting of existing storm drain inlets - Where the review agency determines that this standard would cause inadequate hydraulic performance.

Alternative Device Exemptions

1. Where flows from the water quality design storm as specified in N.J.A.C. 7:8 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.
2. 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 N.J.A.C. 7:8.

Note - The preceding exemptions do not authorize any infringement of requirements in the Residential Site Improvement Standards for bicycle-safe grates in new residential development (N.J.A.C. 5:21-4.18(b)2 and 7.4(a)).

Historic Places Exemption

Where the Department 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.

Attachment D
REQUIRED PRACTICES FOR FUELING OPERATIONS, VEHICLE
MAINTENANCE, AND GOOD HOUSEKEEPING SBRs

A. The following BMPs must be implemented at maintenance yards including maintenance activities at ancillary operations (for example, impound yards, solid waste transfer stations, mobile fueling), where applicable, operated by Tier A Municipalities:

1. Inventory Requirements for Municipal Maintenance Yard Operations (including Ancillary Operations)

- a. Tier A Municipalities shall include for municipal maintenance yard operations an inventory that includes the following:
 - i. A list to be made part of the SPPP of general categories of all materials or machinery located at the municipal maintenance yard, which could be a source of pollutants in a stormwater discharge. The materials in question include, but are not limited to: raw materials; intermediate products; final products; waste materials; by-products; machinery and fuels; and lubricants, solvents, and detergents that are related to the municipal maintenance yard operations or ancillary operations. Materials or machinery that are not exposed to stormwater or that are not located at the municipal maintenance yard or related to its operations do not need to be included.

2. Fueling

- a. No topping off vehicles, mobile fuel tanks, and storage tanks. Drip pans must be used under all hose and pipe connections and other leak-prone areas during bulk transfer of fuels.
- b. Block storm sewer inlets, or contain tank trucks used for bulk transfer, with temporary berms or temporary absorbent booms during the transfer process. If temporary berms are being used instead of blocking the storm sewer inlets, all hose connection points associated with the transfer of fuel must be within the temporary berms during the loading/unloading of bulk fuels. A trained employee must always be present to supervise during bulk fuel transfer.
- c. Clearly post, in a prominent area of the facility, instructions for safe operation of fueling equipment, and appropriate contact information for the person(s) responsible for spill response.
- d. Any equipment, tanks, pumps, piping and fuel dispensing equipment found to be leaking or in disrepair must immediately be repaired or replaced.

3. Vehicle Maintenance

- a. Perform all vehicle and equipment maintenance at an indoor location with a paved floor whenever possible. For projects that must be performed outdoors that last more than one day, portable tents or covers must be placed over the equipment being serviced when not being worked on, and drip pans must be used.

4. General Good Housekeeping

- a. Properly mark or label all containers. Labels must be kept clean and visible. All containers must be kept in good condition and tightly closed when not in use. When practical, containers must be stored indoors. If indoor storage is not practical, containers may be stored outside as long as they are covered and placed on spill platforms. An area that is graded and/or bermed that prevents run-through of stormwater may be used in place of spill platforms. Outdoor storage locations must be regularly maintained.
- b. Conduct cleanups of any spills or liquids or dry materials immediately after discovery. Clean all maintenance areas with dry cleaning methods only. Spills shall be cleaned up with a dry, absorbent material (i.e., kitty litter, sawdust, etc.) and the rest of the area is to be swept. Collected waste is to be disposed of properly. Clean-up materials, spill kits and drip pans must be kept near any liquid transfer areas, protected from rainfall.

5. Good Housekeeping Practices for Salt and De-icing Material Handling

- a. The SPPP for De-icing Material Storage shall include the following required practices to ensure that Municipal Maintenance Yard Operations prevent or minimize the exposure of salt and de-icing materials to stormwater runoff from storage, loading and unloading areas and activities:
 - i. Prevent and/or minimize the spillage of salt and de-icing materials during loading and unloading activities.
 - ii. At the completion of loading and unloading activities, spilled salt and de-icing materials shall be removed using dry cleaning methods and either reused or properly discarded.
 - iii. Sweeping by hand or mechanical means of storage and loading/unloading areas shall be done on a regular basis. More frequent sweeping is required following loading/unloading activities. Sweeping shall also be conducted immediately following, as practicable, loading/unloading activities.
 - iv. Tracking of materials from storage and loading/unloading areas shall be minimized.
 - v. Minimize the distance salt and de-icing materials are transported during loading/unloading activities.
- b. Interim Seasonal Tarping - All Tier A Municipalities must tarp all de-icing materials until a permanent structure is built. Interim storage measures must include, but are not limited to the following:
 - i. Tarping materials that are not actively being used.
 - ii. The storage of de-icing materials (salt and de-icing products) outside is limited to October 15th through April 30th. All salt and de-icing materials must be removed from the site prior to May 1st and may not be stored outside again until October 15th.
 - iii. The implementing of a regular inspection, sweeping and housekeeping program to ensure that the material is maintained and stored in a proper manner.

6. Inspections

a. Inspections of all Municipal Maintenance Yard Operations shall be conducted regularly.

b. Discharge of Stormwater from Secondary Containment

i. The discharge pipe/outfall from a secondary containment area must have a valve and the valve must remain closed at all times except as described below. A municipality may discharge stormwater that accumulated in the secondary containment area if a visual inspection is performed to ensure that the contents of aboveground storage tank have not come in contact with the stormwater to be discharged. Visual inspections are only effective when dealing with materials that can be observed, like petroleum. If the contents of the tank are not visible in stormwater, the municipality must rely on previous tank inspections to determine with some degree of certainty that the tank has not leaked. If the municipality cannot make a determination with reasonable certainty that the stormwater in the secondary containment area is uncontaminated by the contents of the tank, then the stormwater shall be hauled for proper disposal.

Appendix B

Municipal Background Mapping

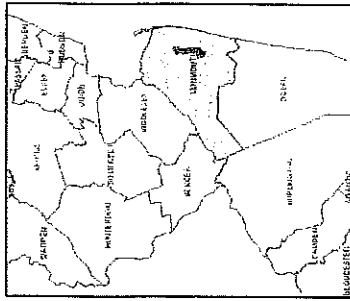
Municipal Background Mapping

The following list of figures is provided in compliance with the Stormwater Management Plan background mapping requirements for the Borough of Tinton Falls, Monmouth County, New Jersey:

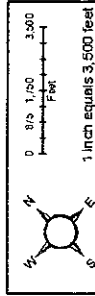
List of Figures

Figure 1	Location Map
Figure 2	Municipal Boundaries (USGS Mapping)
Figure 3	Wellhead Protection Areas Map
Figure 4	Hydrology and HUC 14 Watershed Map
Figure 5	Groundwater Recharge Map
Figure 6	Existing Land Use / Land Cover Map

The office of Leon S. Avakian, Inc., Municipal Engineer for the Borough of Tinton Falls, would like to acknowledge and thank Dr. Steven Souza and key personnel from the environmental consulting firm of Princeton Hydro, based in Ringoes, New Jersey, for their assistance in the preparation of the maps provided.



PRINCETON HYDRO, LLC
1108 OLD YORK ROAD
P.O. BOX 720
RINGOES, NJ 08551



SOURCES

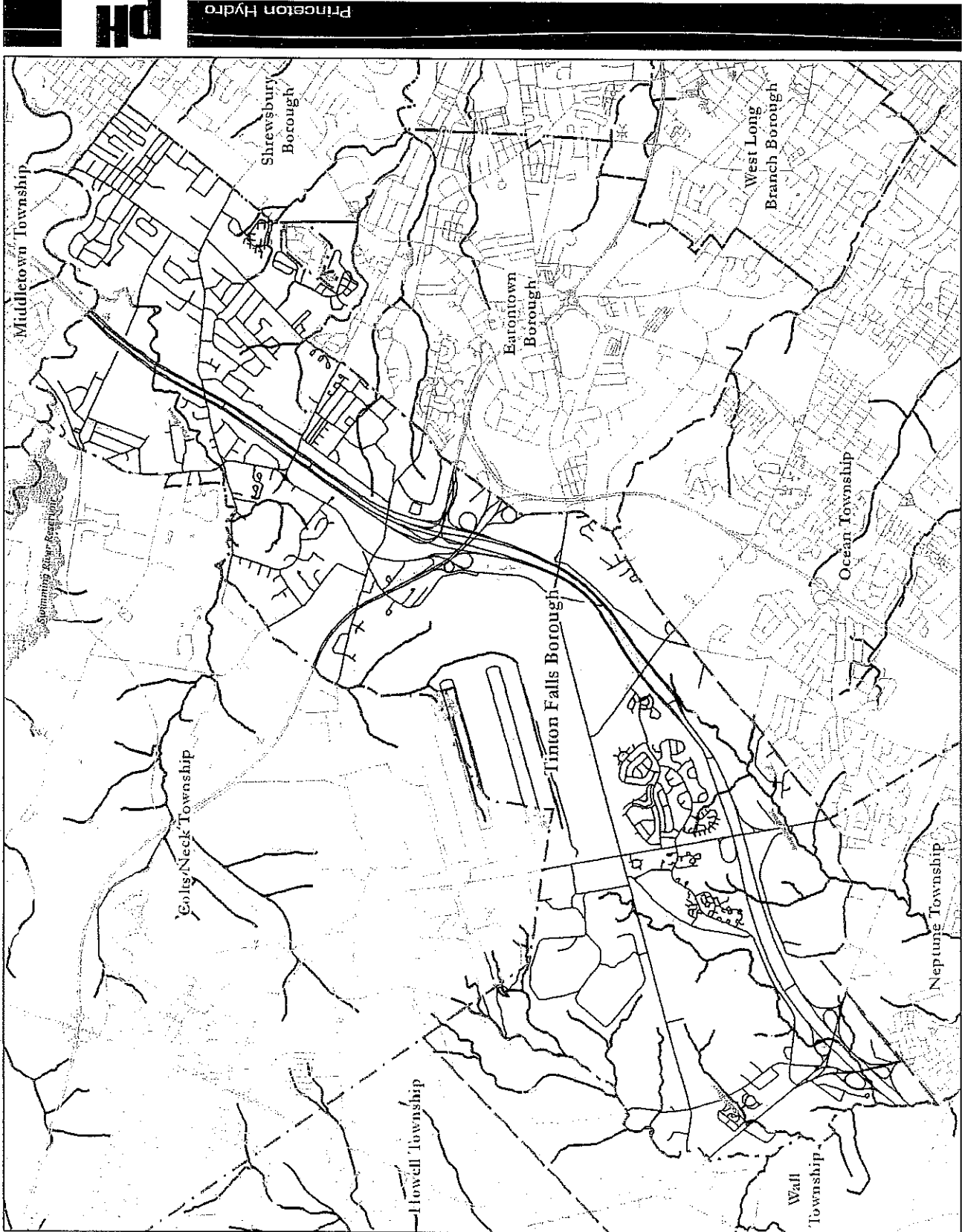
1. Stream, site, and township boundary spatial data were obtained from the NJDCP GIS website
2. Road data from US Census Tiger Line files

FIGURE 1
LOCATION MAP

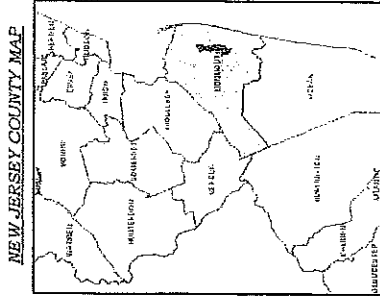
TINTON FALLS BOROUGH
MUNICIPAL STORMWATER
MANAGEMENT PLAN
MONMOUTH COUNTY, NEW JERSEY

LEGEND

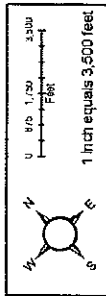
- Municipality Boundary
- Roads
- Streams
- Water



Princeton Hydro



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RINGOES, NJ 08551




SOURCES

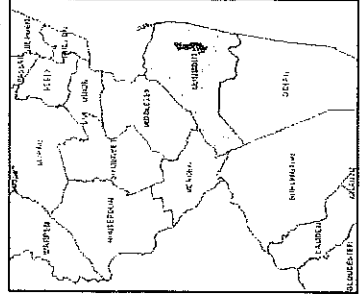
1. USGS 7.5 Minute Series Quadrangle maps for Atlantic Highlands (NJ), Farmingdale (NJ), Long Branch (NJ), and Marlboro (NJ), as obtained from the NCEM GIS website.
2. Municipality boundary data obtained from the NJDEP GIS website.

FIGURE 2
USGS 7.5 MINUTE
QUADRANGLE MAP

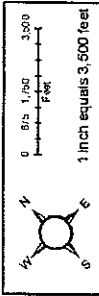
TINTON FALLS BOROUGH
MUNICIPAL STORMWATER
MANAGEMENT PLAN
MONMOUTH COUNTY, NEW JERSEY

LEGEND

 Tinton Falls Borough



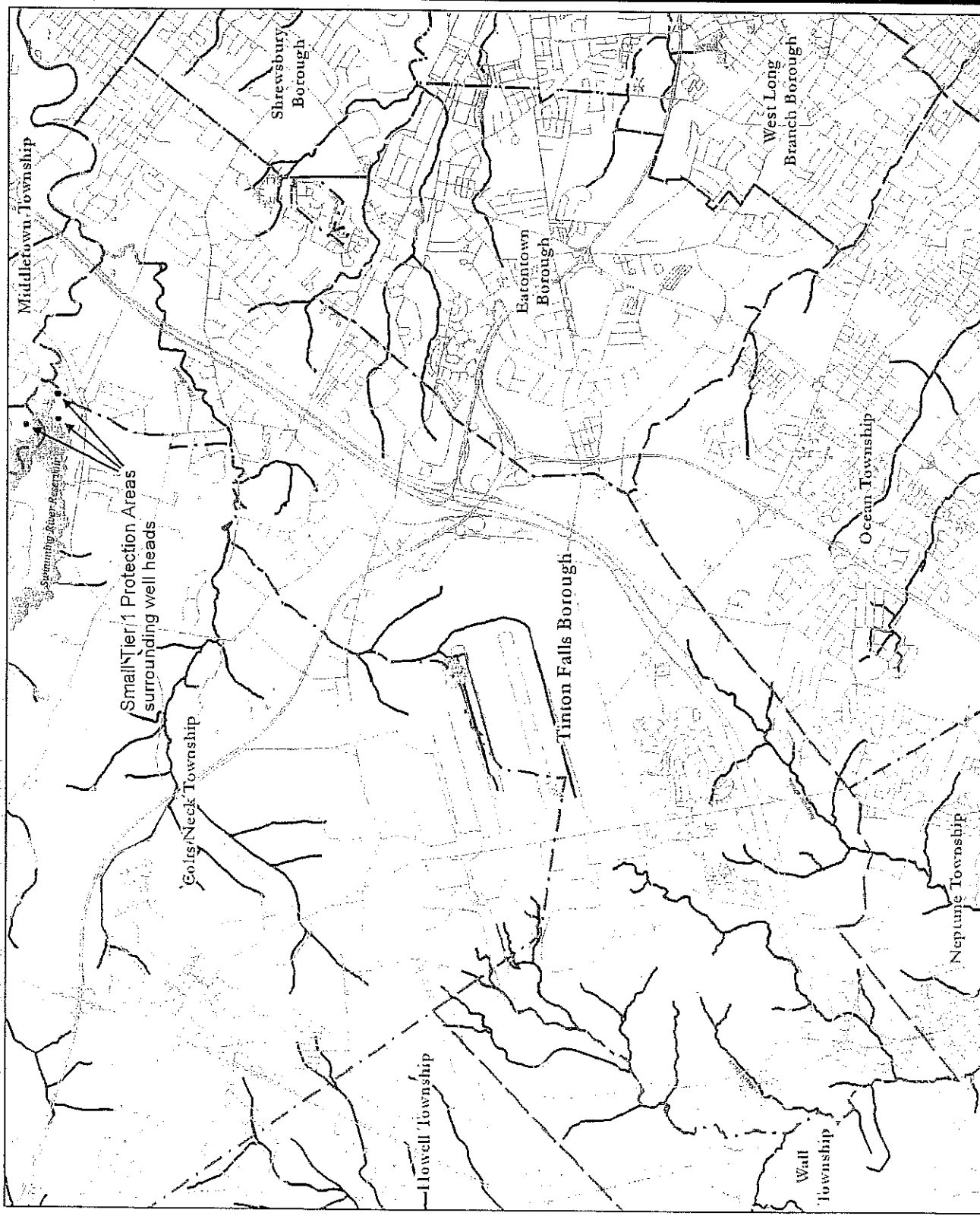
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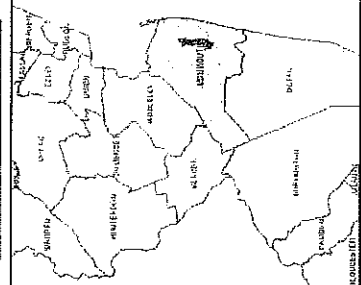


- SOURCES**
1. Well Head Protection Areas obtained from the New Jersey Geospatial Survey (NJGS)
 2. Public Community Water Supply Wells, streams, and roads obtained from NJDEP GIS website
 3. Road data from US Census Tiger Line files

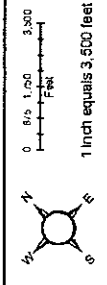
FIGURE 3
WELL HEAD PROTECTION
AREAS MAP

- LEGEND**
- Municipality Boundary
 - Roads
 - Streams
 - Water
 - Public Community Water Supply Wells





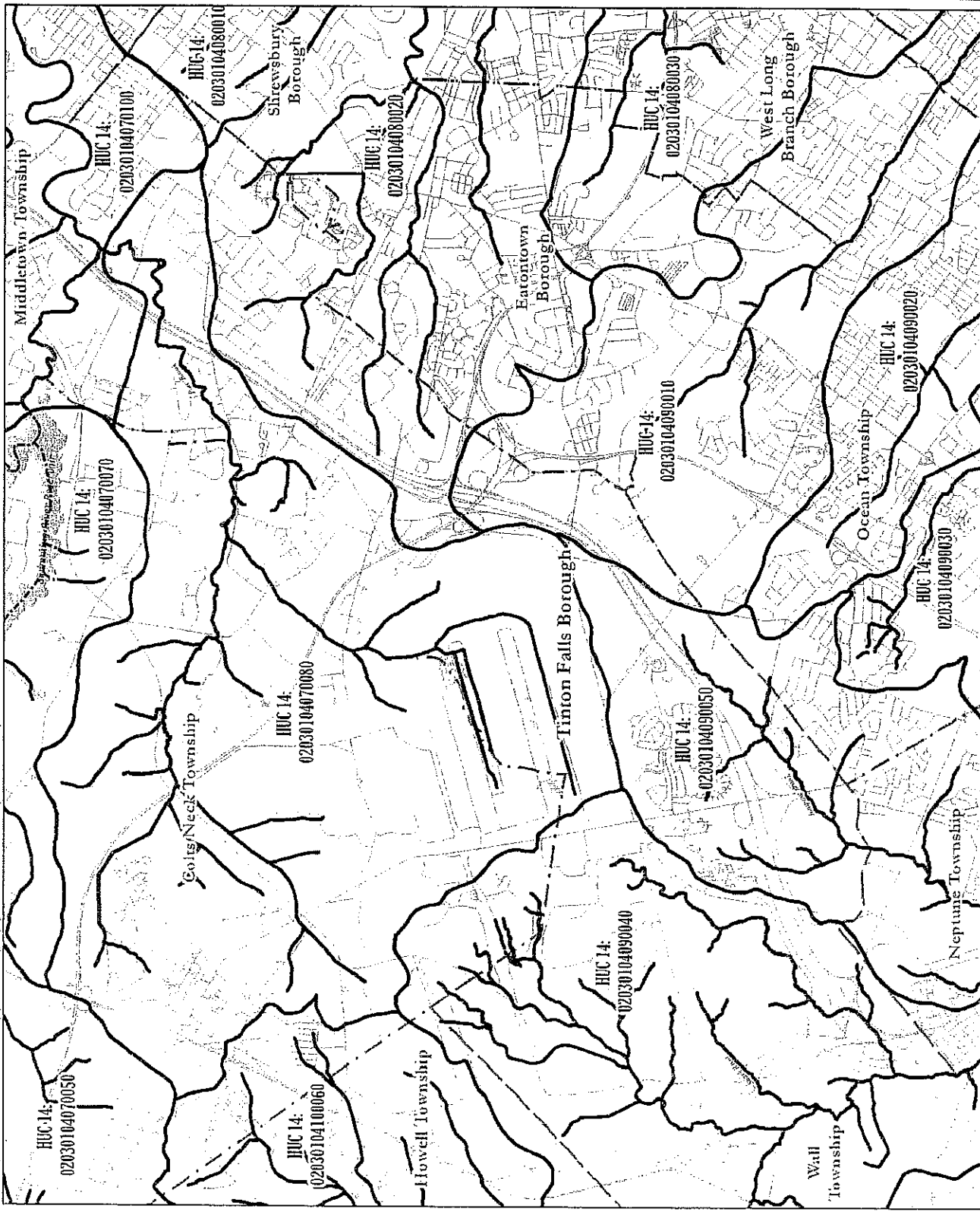
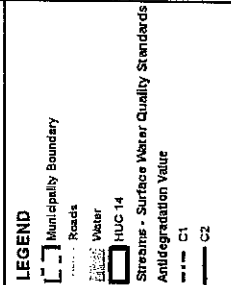
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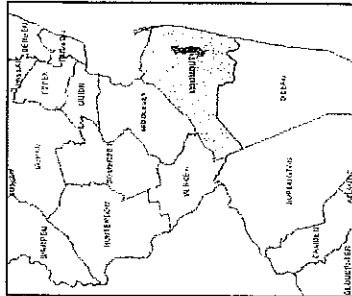


SOURCES:
1. HUC 14 watershed domain's surface water quality standards data obtained from the NJDEP GIS website
2. Stream, lake, township boundary, and spatial data were obtained from the NJDEP GIS website
3. Road data from US Census Tiger line files

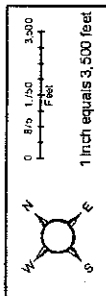
FIGURE 4
HYDROLOGY & HUC 14
WATERSHED MAP

TINTON FALLS BOROUGH
MUNICIPAL STORMWATER
MANAGEMENT PLAN
MONMOUTH COUNTY, NEW JERSEY





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SOURCES

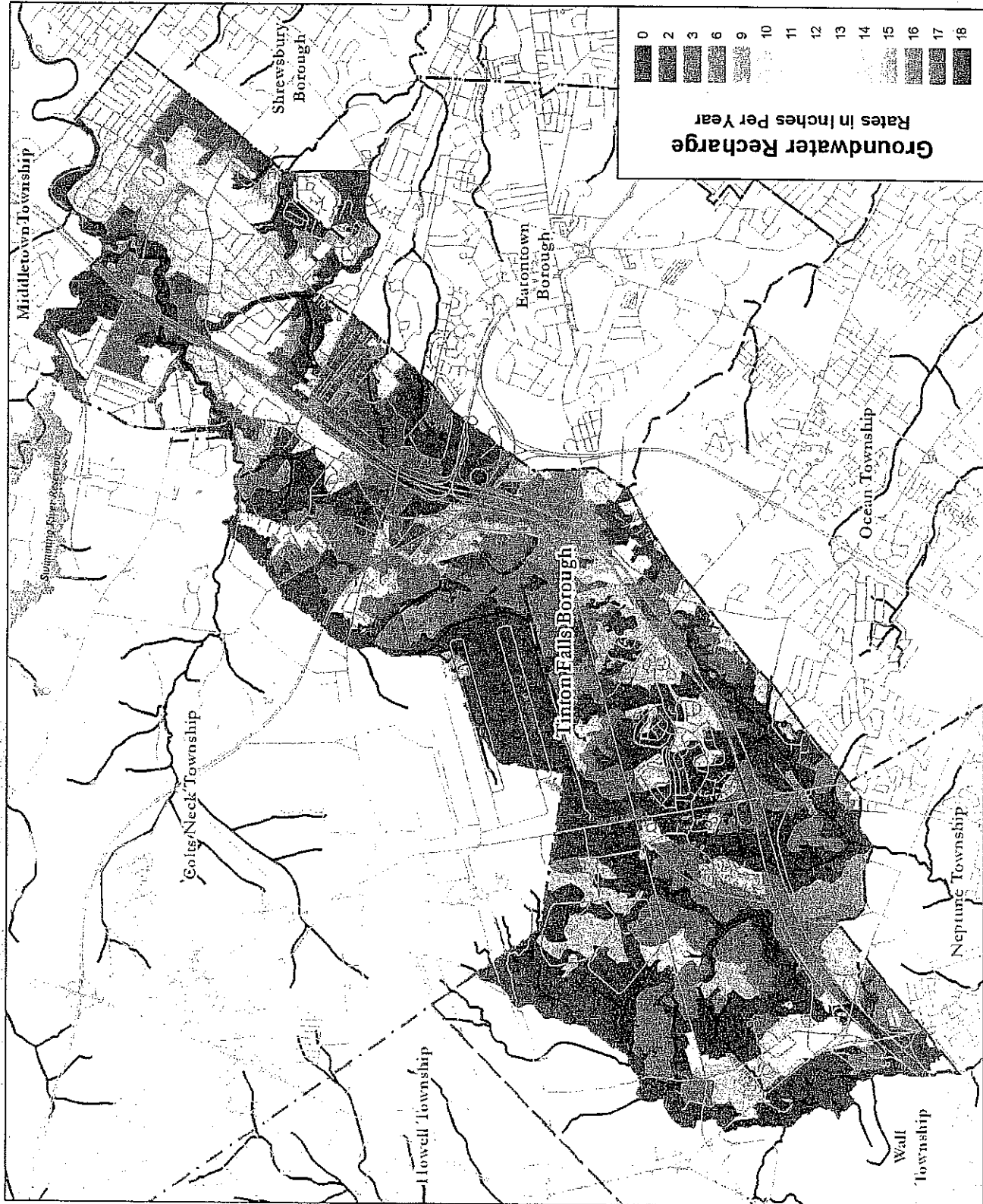
1. Groundwater Recharge estimates obtained from NJ Department of Environmental Protection and using methodology from NJDEP GIS 12. Data displayed here reflects the County recharge by inches per year.
2. Stream, lake, township boundary, and county boundary, spatial data were obtained from the NJDEP GIS website.
3. Road data from US Census Tiger Line files.

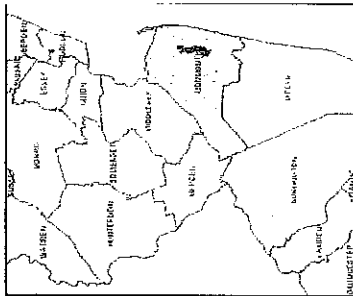
FIGURE 5
GROUNDWATER
RECHARGE MAP

TINTON FALLS BOROUGH
MUNICIPAL STORMWATER
MANAGEMENT PLAN
MONMOUTH COUNTY, NEW JERSEY

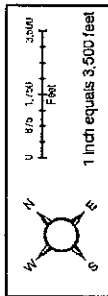
LEGEND

- Municipality Boundary
- Roads
- Streams
- Water





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SOURCES

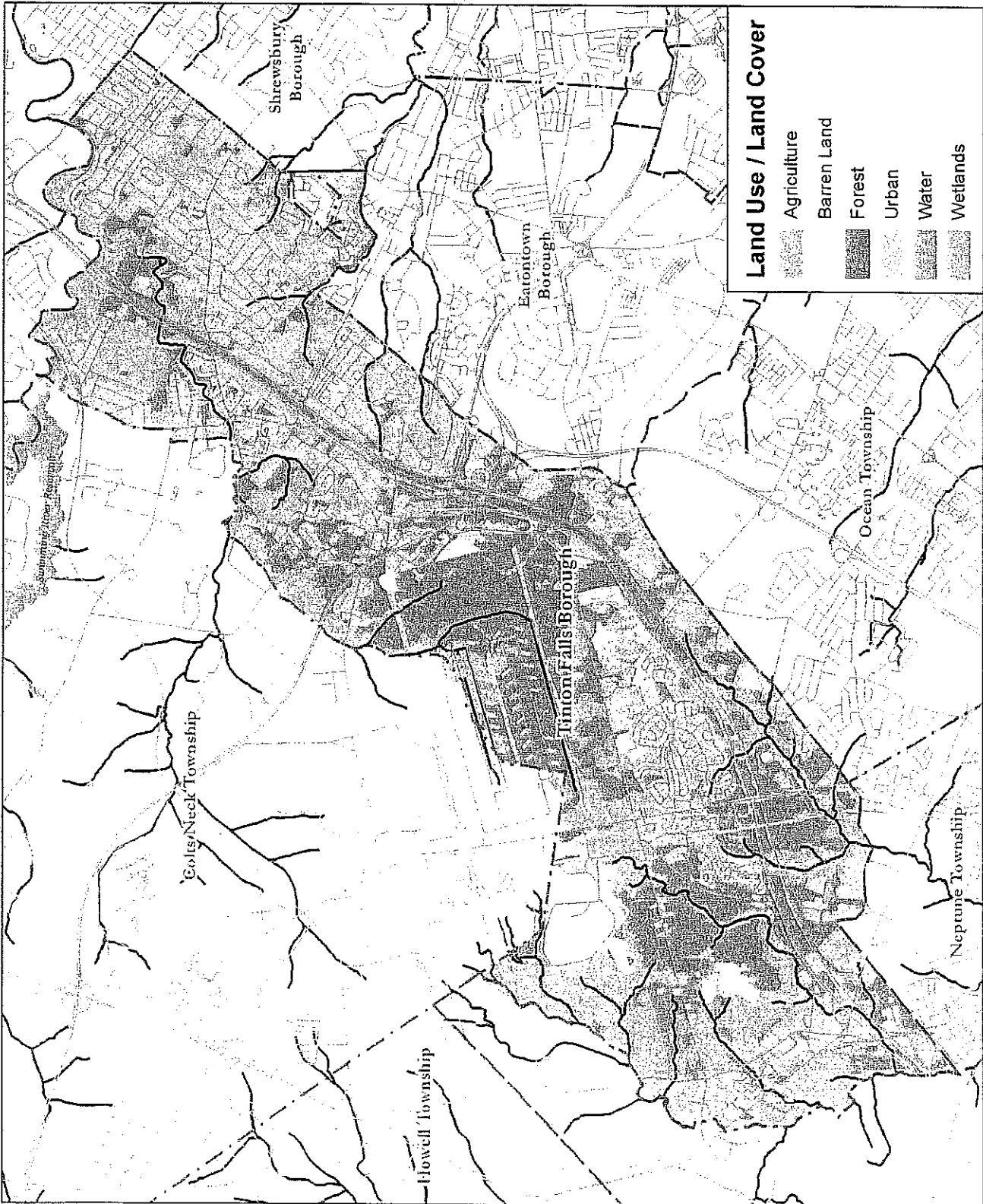
1. Land Use / Land Cover data (1998) were obtained from the NJDEP GIS website
2. Stream, lake, township boundary, and county boundary spatial data were obtained from the NJDEP GIS website
3. Road data from US Census Tiger Line files

FIGURE 6
LAND USE / LAND COVER MAP

TINTON FALLS BOROUGH
MUNICIPAL STORMWATER
MANAGEMENT PLAN
MONMOUTH COUNTY, NEW JERSEY

LEGEND

- Municipality Boundary
- Roads
- Streams
- Water



Appendix C

Annual Report and Certification

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality
Information

Municipality: Borough of Tinton Falls County Monmouth

NJPDES # : NJG0150070 PI ID #: 167056

Team Member: Peter R. Avakian, PE, Borough Engineer

Date April 1, 2005 Effective Date of Permit Authorization (EDPA): April 1, 2004

Annual Certification

"I certify under penalty of law that this Annual Report and Certification and all attached documents were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate this information. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering this information, the information in this Annual Report and Certification and all attached documents is, to the best of my knowledge and belief, true, accurate and complete.

"I certify that the municipality is in compliance with its stormwater program, Stormwater Pollution Prevention Plan (SPPP) and the NJPDES Tier A Municipal Stormwater General Permit No. NJ0141852 except for any incidents of noncompliance which are identified herein. For any incidents of noncompliance, the Annual Report identifies the steps being taken to remedy the noncompliance and to prevent such incidents from recurring.

"I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for purposely, knowingly, recklessly, or negligently submitting false information."

Signature _____ Date _____

Print or Type Name _____

Print or Type Title _____

WHO MUST SIGN?

Either a principal executive officer or a ranking elected official; or duly authorized representative.

A principal executive officer or ranking elected official of the municipality may assign his or her signatory authority for this Certification to a duly authorized representative, which is a named individual or a title of a position having overall responsibility for the operation of municipal stormwater facilities or municipal environmental matters, by submitting a letter to the Bureau of Permit Management stating said authority and naming the individual or position. The duly authorized representative is the Municipal Stormwater Program Coordinator only if the Coordinator has overall responsibility for the operation of municipal stormwater facilities or municipal environmental matters.

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality
Information

Municipality: Borough of Tinton Falls County: Monmouth

NJPDES # : NJG0150070 PI ID #: 167056

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Incidents of Noncompliance

For any incidents of noncompliance, identify the steps being taken to remedy the noncompliance and to prevent such incidents from recurring.

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality Information

Municipality: Borough of Tinton Falls County: Monmouth

NJPDES #: NJG0150070 PI ID #: 167056

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Sharing of Responsibilities

For each of the following, indicate if you are relying on another entity to satisfy all or part of any permit requirements. For those you checked "yes," please give additional information on or with the appropriate Annual Report and Certification form (attach sheet if needed).

Statewide Basic Requirement	Relying on another entity?	
	"yes"	"no"
Public Notice	<input type="checkbox"/>	<input type="checkbox"/>
Ensure compliance with RSIS for stormwater management	<input type="checkbox"/>	<input type="checkbox"/>
Municipal stormwater management plan	<input type="checkbox"/>	<input type="checkbox"/>
Municipal stormwater control ordinance	<input type="checkbox"/>	<input type="checkbox"/>
Long term operation and maintenance of BMPs (post-construction)	<input type="checkbox"/>	<input type="checkbox"/>
Storm drain inlet design standard (post-construction)	<input type="checkbox"/>	<input type="checkbox"/>
Local Public Education Program	<input type="checkbox"/>	<input type="checkbox"/>
Storm Drain Inlet Labeling Program	<input type="checkbox"/>	<input type="checkbox"/>
Pet waste ordinance	<input type="checkbox"/>	<input type="checkbox"/>
Litter ordinance	<input type="checkbox"/>	<input type="checkbox"/>
Improper disposal of waste ordinance	<input type="checkbox"/>	<input type="checkbox"/>
Wildlife feeding ordinance	<input type="checkbox"/>	<input type="checkbox"/>
Yard waste collection program (including ordinance)	<input type="checkbox"/>	<input type="checkbox"/>
Outfall pipe mapping	<input type="checkbox"/>	<input type="checkbox"/>
Illicit connection ordinance	<input type="checkbox"/>	<input type="checkbox"/>
Illicit connection elimination program	<input type="checkbox"/>	<input type="checkbox"/>
Street sweeping	<input type="checkbox"/>	<input type="checkbox"/>
Storm drain inlet retrofitting	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance of municipally operated stormwater facilities	<input type="checkbox"/>	<input type="checkbox"/>
Road erosion control	<input type="checkbox"/>	<input type="checkbox"/>
Outfall pipe stream scouring	<input type="checkbox"/>	<input type="checkbox"/>
De-icing and sand storage	<input type="checkbox"/>	<input type="checkbox"/>
Fueling operations	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle maintenance	<input type="checkbox"/>	<input type="checkbox"/>
Good housekeeping	<input type="checkbox"/>	<input type="checkbox"/>
Employee Training	<input type="checkbox"/>	<input type="checkbox"/>

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality
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Municipality: Borough of Tinton Falls County: Monmouth

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Team Member: Peter R. Avakian, PE, Borough Engineer

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De-icing Material and Sand Storage

Are you currently using an existing permanent structure for de-icing material storage?

Y (☐) N (☐) N/A (☐)

If a permanent structure is not yet built, is seasonal tarping being used? Y (☐) N (☐) N/A (☐)

If you answered N/A to the above questions, please explain:

If sand is being stored outside, is it set back 50 feet from storm sewer inlets, ditches or other stormwater conveyance channels, and surface water bodies? Y (☐) N (☐) N/A (☐)

Fueling Operations

Are you implementing Standard Operating Procedures for vehicle fueling and receiving of bulk fuel deliveries at maintenance yard operations? Y (☐) N (☐) Date SOP in effect: _____

Vehicle Maintenance

Are you implementing Standard Operating Procedures for vehicle maintenance and repair activities at maintenance yard operations? Y (☐) N (☐) Date SOP in effect: _____

Good Housekeeping Practices

Are you implementing Good Housekeeping Practices for all materials or machinery listed in the Inventory Requirements for Municipal Maintenance Yard Operations (including maintenance activities and ancillary operations)? Y (☐) N (☐) Date practices are in effect: _____

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality
Information

Municipality: Borough of Tinton Falls County: Monmouth

NJPDES #: NJG0150070 PI ID #: 167056

Team Member: Peter R. Avakian, PE, Borough Engineer

Date: April 1, 2005 Effective Date of Permit Authorization (EDPA): April 1, 2004

Stormwater Facility Maintenance

Have you developed a Stormwater Facility Maintenance Program? Y (☐) N (☐)

Date development of program completed: _____

Catch Basins:

Total number of catch basins that you operate: _____

Were all catch basins inspected and/or cleaned? Y (☐) N (☐)

Total number of catch basins cleaned: _____

Amount of materials removed from catch basins, if available: _____ SELECT UNIT

Other Stormwater Facilities:

Were all stormwater facilities (e.g., detention basins, filter strips, riparian buffers, infiltration trenches, sand filters, constructed wetlands, wet basins, bioretention systems, low flow bypasses, and stormwater conveyances) that you operate inspected? Y (☐) N (☐)

Were any found to be in need of cleaning or repair in order to function properly? Y (☐) N (☐)

Was the cleaning performed? Y (☐) N (☐) Were repairs made? Y (☐) N (☐)

Describe repair(s) or schedule for repair(s). Attach additional pages as necessary.

Road Erosion Control Maintenance

Have you developed a Roadside Erosion Control Program? Y (☐) N (☐)

Date development of program completed: _____

Were any areas of road erosion identified? Y (☐) N (☐)

Attach a sheet identifying the locations of road erosion and whether repairs have been made.

Annual Report and Certification

Tier A Municipal Stormwater General Permit

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NJPDES # :NJG0150070 PI ID #: 167056

Team Member: Peter R. Avakian, PE, Borough Engineer

Date: April 1, 2005 Effective Date of Permit Authorization (EDPA): April 1, 2004

Storm Drain Inlet Retrofitting

Were all storm drain inlets in direct contact with repaving, repairing, reconstruction or alterations retrofitted or replaced to meet the standard? Y (☐) N (☐)

Attach a sheet indicating areas where there were repaving, repairing, reconstruction, or alteration projects.

Attach a list of storm drain inlets that were exempted as a part of these projects.

Outfall Pipe Stream Scouring Remediation

Have you developed an Outfall Pipe Stream Scouring Remediation Program? Y (☐) N (☐)

Date development of program completed: _____

Program Status

[illegible]

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality
Information

Municipality: Borough of Tinton Falls County: Monmouth

NJPDES #: NJG0150070 PI ID #: 167056

Team Member: Peter R. Avakian, PE, Borough Engineer

Date: April 1, 2005 Effective Date of Permit Authorization (EDPA): April 1, 2004

Street Sweeping Program

Have you developed a Street Sweeping Program? Y (☐) N (☐)

Were all required streets swept? Y (☐) N (☐)

Did you sweep more than the required streets? Y (☐) N (☐)

What was the total number of miles swept? _____ miles.

Please list the total amount of materials collected for each month since May 2nd of previous year:

May _____

June _____

July _____

August _____

September _____

October _____

November _____

December _____

January _____

February _____

March _____

April _____

If street sweeping was not completed for any of these months, please explain:

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality Information

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NJPDES # : NJG0150070 PI ID #: 167056

Team Member: Peter R. Avakian, PE, Borough Engineer

Date April 1, 2005 Effective Date of Permit Authorization (EDPA): April 1, 2004

Illicit Connection Elimination and MS4 Outfall Pipe Mapping

Outfall Pipe Mapping

Number of sectors with MS4 outfall pipes mapped to date (please check): ☐0 ☐1 ☐2

Date first sector completed: _____ Date second sector completed: _____

Illicit Connection Elimination Program

Have you developed an Illicit Connection Elimination program? Y (☐) N (☐)

Date development of program completed: _____

Have you begun the initial physical inspection of all outfall pipes using the Department's Illicit Connection Inspection Report form? Y (☐) N (☐)

Number of outfalls physically inspected since May 2nd of previous year: _____

Number of outfalls found to have dry weather flows during that period: _____

Number of outfalls found to have an illicit connection during that period: _____

Number of illicit connections found during that period: _____

Number of illicit connections eliminated during that period: _____

(For any outfalls found to have dry weather flows, a copy of the inspection report shall be submitted with this Annual Report and Certification.)

Provide the following information for each outfall found to have an illicit connection since May 2nd of previous year.

Outfall Identifier	Source of Illicit Connection	Date Eliminated

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality
Information

Municipality: Borough of Tinton Falls County Monmouth

NJPDES # : NJG0150070 PI ID #: 167056

Team Member: Peter R. Avakian, PE, Borough Engineer

Date April 1, 2005 Effective Date of Permit Authorization (EDPA): April 1, 2004

Improper Disposal of Waste

Have you adopted and are you enforcing a:

Pet Waste Ordinance Y (☐) N (☐)

Date adopted: _____

Litter Ordinance Y (☐) N (☐) N/A (☐)

Date adopted: _____

State Litter Statute Y (☐) N (☐) N/A (☐)

Improper Disposal of Waste Ordinance Y (☐) N (☐)

Date adopted: _____

Wildlife Feeding Ordinance Y (☐) N (☐)

Date adopted: _____

Containerized Yard Waste Ordinance Y (☐) N (☐) N/A (☐)

Date adopted: _____

Yard Waste Collection Program Ordinance Y (☐) N (☐) N/A (☐)

Date adopted: _____

Illicit Connection Ordinance Y (☐) N (☐)

Date adopted: _____

Status of these ordinances (if not adopted):

Method(s) of enforcement (e.g., summons, warnings, additional signs, etc.):

Are you distributing the Pet Waste Information Sheets with pet licenses? Y (☐) N (☐)

Yard Waste Collection Program

Have you developed a yard waste collection program? Y (☐) N (☐) N/A (☐)

Collection Dates:

October _____ November _____ December _____ Spring Cleanup _____

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality
Information

Municipality: Borough of Tinton Falls County: Monmouth

NJPDES #: NJG0150070 PI ID #: 167056

Team Member: Peter R. Avakian, PE, Borough Engineer

Date April 1, 2005 Effective Date of Permit Authorization (EDPA): April 1, 2004

Local Public Education

Local Public Education Program

Have you developed a Local Public Education Program? Y (☐) N (☐)

Date development of program completed: _____

Date of Annual Distribution of Educational Brochure: _____

Method of Distribution:

Date of Annual Event: _____

Description of Event:

Storm Drain Inlet Labeling

Have you established a storm drain inlet labeling program? Y (☐) N (☐)

Have you divided your municipality into two sectors for the purpose of storm drain inlet labeling?

Y (☐) N (☐)

If "yes," indicate the number of sectors labeled to date: ☐ 0 ☐ 1 ☐ 2

If "no," please check approximate percentage of storm drain inlets labeled to date:

☐ 25% ☐ 50% ☐ 75% ☐ 100% ☐ other (specify) _____%

Have you developed a long term maintenance plan for the storm drain inlet labels? Y (☐) N (☐)

Are you implementing your long-term maintenance plan? Y (☐) N (☐)

For storm drain inlets not installed by you, are you enforcing compliance with the standards set forth in Attachment C of the permit to control passage of solid and floatable materials? Y (☐) N (☐)

If yes, specify whether such compliance is enforced through your stormwater control ordinance(s) or through a separate ordinance (and provide the separate ordinance number):

Are you ensuring adequate long-term operation and maintenance of BMPs on property that you do not own or operate? Y (☐) N (☐)

If yes, briefly indicate how this being accomplished (e.g., ordinance requiring operation and maintenance by private entity; operation and maintenance by you or other governmental entity):

Have you reexamined your approved municipal stormwater management plan at each reexamination of your master plan in accordance with N.J.A.C. 7:8-4? Y (☐) N (☐)

Date reexamination report adopted: _____

Have you adopted a municipal stormwater control ordinance(s) in accordance with N.J.A.C. 7:8-4? Y (☐) N (☐)

Date adopted: _____

Status of this ordinance(s) (if not adopted): _____

Have you submitted your adopted municipal stormwater management plan and stormwater control ordinance(s) to the appropriate county review agency for approval? Y (☐) N (☐)

Date submitted: _____

Are your adopted municipal stormwater management plan and stormwater control ordinance(s) approved and in effect? Y (☐) N (☐)

Effective date: _____

Ordinance number(s): _____

Status of adopted plan and ordinance(s) (if not in effect): _____

Have you:

Placed your approved municipal stormwater management plan and stormwater control ordinance(s) on your website, and notified the Department, the Soil Conservation District and State Soil Conservation Committee? Y (☐) N (☐) N/A (☐)

Date you notified the Department: _____

OR

Submitted your approved municipal stormwater management plan and stormwater control ordinance(s) to the Department, and provided notice to the Soil Conservation District and State Soil Conservation Committee? Y (☐) N (☐) N/A (☐)

Date submitted to the Department: _____

Are you enforcing your approved municipal stormwater control ordinance(s)? Y (☐) N (☐)

Have you granted any variances or exemptions from the design and performance standards for stormwater management measures set forth in your approved municipal stormwater management plan and stormwater control ordinance(s)? Y (☐) N (☐)

If yes, does your approved municipal stormwater management plan include a mitigation plan in accordance with N.J.A.C. 7:8-4.2(c)11? Y (☐) N (☐)

Did you submit a written report to the county review agency and the Department describing the variance or exemption and the required mitigation? Y (☐) N (☐)

Date(s) report(s) submitted to the Department: _____

Annual Report and Certification

Tier A Municipal Stormwater General Permit

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Team Member: Peter R. Avakian, PE, Borough Engineer

Date April 1, 2005 Effective Date of Permit Authorization (EDPA): April 1, 2004

Post-Construction Stormwater Management in New Development and Redevelopment

Are you ensuring that any residential development and redevelopment projects that are subject to the Residential Site Improvement Standards for stormwater management comply with those standards?

Y (☐) N (☐)

Are you ensuring adequate long-term operation and maintenance of BMPs on property that you own or operate? Y (☐) N (☐)

For storm drain inlets that you install, are you complying with the standards set forth in Attachment C of the permit to control passage of solid and floatable materials? Y (☐) N (☐)

Have you forwarded a copy of the proposed municipal stormwater management plan required by the permit to the county planning board at least 20 days prior to the date of your public hearing on that plan? Y (☐) N (☐)

Date forwarded: _____

[for purposes of this annual report, "municipal stormwater management plan" means a new municipal stormwater management plan, as well as amendments to an existing municipal stormwater management plan]

Have you adopted a municipal stormwater management plan in accordance with N.J.A.C. 7:8-4? Y (☐) N (☐)

Date adopted: _____

Status of this plan (if not adopted):

Have you transmitted, within 30 days after adoption, a copy of your adopted municipal stormwater management plan to the county planning board for its information and files? Y (☐) N (☐)

Date transmitted: _____

Have you forwarded a copy of the proposed municipal stormwater control ordinance(s) required by the permit to the county planning board at least 10 days prior to the date of your public hearing on the ordinance(s)? Y (☐) N (☐)

Date forwarded: _____

Annual Report and Certification

Tier A Municipal Stormwater General Permit

Municipality
Information

Municipality: Borough of Tinton Falls County Monmouth

NJPDES # : NJG0150070 PI ID #: 167056

Team Member: Peter R. Avakian, PE, Borough Engineer

Date April 1, 2005 Effective Date of Permit Authorization (EDPA): April 1, 2004

Stormwater Pollution Prevention Plan

Have you prepared a Stormwater Pollution Prevention Plan that describes your Stormwater Program?
Y (☐) N (☐)

Does the SPPP include all of the information and items required by the permit (including Attachment A)?
Y (☐) N (☐)

Is the SPPP signed and dated? Y (☐) N (☐) Date SPPP signed: _____

Is the SPPP retained by your Municipal Stormwater Program Coordinator? Y (☐) N (☐)

Was the SPPP amended since the last annual report? Y (☐) N (☐)

If so, in general terms, what was amended?

Public Notice

Are you complying with applicable State and local public notice requirements when providing for public participation in the development and implementation of your stormwater program?
Y (☐) N (☐)

Appendix D

Monmouth County Population, Employment and Land Development Projections

Monmouth County Build-Out Model

Linda J. Brennen, PP, AICP

January 2005

INTRODUCTION

In 1998, the Environmental Planning Section of the Monmouth County Planning Board undertook a study of zoning trends in the county that led to the development of the *Monmouth County Composite Zoning Study 2000*. Zoning was reviewed in 25 of the county's 53 municipalities, and categorized into composite zones. This study recognized that the next steps were to complete the categorization for the remaining 28 municipalities, assemble up to date zoning maps for all 53 municipalities, make any necessary revisions to accommodate change, and then have these maps digitized into a geographic information system. Once this was completed, a model would be developed to make build-out projections. It was anticipated that this work could be completed through funding received for the development of a county wide wastewater management plan, as this plan would provide the test case for use of this information for wastewater flow projections. In the end, the digitizing of the zoning maps was funded through the grant, but all modeling work was done internally.

Beginning in 2001 and continuing into 2002, a model was developed and refined that would project population, employment and sewerage flows. Digitizing the zoning maps into the county Geographic Information System (GIS) and updating of the zoning information were completed simultaneously during the summer of 2002 and test cases were run through the model. The model projected population growth from 1995 to 2000 for a small sample of diverse municipalities. The results were compared to the census reports. Amazingly, the projections were within 3% of the census numbers in most cases. The worst case was approximately 6% greater than the census count, but as it was a small town, the actual number was not substantially higher. The Monmouth County Planning Board accepted the model for use.

This white paper, which has been updated periodically, provides the detail that explains how the model works, how it can be applied, what factors were chosen for use and how the model has been expanded and refined over time.

MUNICIPAL ZONING

Tables were created for each municipality identifying each zone district and the applicable requirements of that zone; such as minimum lot size, maximum density, floor area ratio, building coverage, impervious coverage, and mix of uses, where applicable. Permitted uses were reviewed to determine the appropriate composite zone category. The zones were further sub-categorized in accordance with the 2000 Composite Zoning Study.

When preparing to run the model, the GIS layers are manipulated to identify vacant, developable land by municipal zone, as separate polygons. The land use/land cover GIS layer is from the 1995 NJDEP fly-over. The zoning layer has been updated over time. Adopted zoning changes through at

least December 31, 2004 were included for the final Cross Acceptance model runs. Known, undevelopable vacant lands are subtracted out, such as dedicated parkland, deed restricted farmland, and NJDEP mapped wetlands. Study area boundaries can be overlaid for specific projects and the information can be clipped. Study area boundaries can be such things as a municipal boundary, a utility franchise area boundary, or a highway corridor.

Data tables are created from the GIS layers that identified each polygon with all the accessory information that is available. These data tables are imported into Microsoft Excel workbooks and tabulated. In the first worksheet, totals are reported on the area of each zone in both square feet and acres. Both units are used to provide a cross check later on. A second worksheet is then constructed where municipal zoning requirements are used to determine the maximum amount of development that could be expected from each zone. Formulas were constructed for each zone based on that zone's adopted requirements. Since the ultimate goal of this model is to project maximum development potential in the future, whether for sizing a sewerage treatment plant or looking at the carrying capacity of a highway, the most intense development option is used in each zone that allows more than one development option.

For residential zones, the total developable area is multiplied by the maximum density, if expressed in dwelling units per acre. If density is expressed in square foot lot sizes, the maximum density is calculated after subtracting out an averaged 10% factor for such development limiting features as infrastructure. Ten percent is used as an industry standard and county Planning Board staff experience held this percentage to be reasonable for patterns generally seen in Monmouth County.

Non-residential zones (specifically those categorized as Office-Business, Research-Office-Warehouse-Laboratory, Commercial, or Industrial) often have allowable development density expressed in one of three ways: Floor Area Ratio, Impervious Coverage, or Building Coverage. However, some municipalities do not include such regulations in their zoning and others that provide only an impervious cover maximum do not specifically limit building size. During 2003, a study of the relationship between impervious cover and building cover requirements was made to assist in determining what part of the impervious cover could be assumed, on a general level, to represent the building footprint. The study further analyzed relationship patterns between coverage regulations and composite zone categories to allow for an extension of average developable building areas into zones without regulations. The study results were reported in a draft white paper issued to the Monmouth County Planning Board. That paper was titled, *Impervious Cover Study: Twenty Monmouth County Municipalities*, and was dated November 2003. Average building cover maximums by composite zone were incorporated into the projection model when the specific zoning did not provide a FAR or regulate building cover. When a FAR was given for the zone, the total developable land area was simply multiplied by the FAR. When a building cover maximum was provided, it was multiplied by the developable land total for that zone. The potential development for each zone is totaled.

Impervious cover projections are also calculated by the model for use in stormwater management planning. Where no impervious cover limit was specified in the municipal zone regulations, the average coverage noted in the impervious cover study white paper for that composite zone category was used.

Zones that allow varied forms of development are treated differently to accommodate the potential for varied development patterns. Conservation/Recreation (Con/Rec) and Mixed Use zones are examples. Some Con/Rec zones allow only recreation development and were then treated as such. However, some allow both recreational and residential development. In these cases they were treated as mixed use zones. Where the pattern of development for a mixed-use zone was known or dictated by the zoning regulations, that pattern was accounted for in the model. Where it was not known nor dictated by zoning regulations, a 50/50 split was assumed. The total developable land area was divided into residential and commercial components. The residential portion was multiplied by the applicable density factor and the commercial portion was multiplied by the applicable FAR or coverage factor.

The worksheets are modified when zoning regulations change. If the geography of the municipal zoning changes, the GIS data is rerun and the calculation tables revised or rerun, depending on the significance of the revision.

Once the individual zone developability has been calculated, totals of developable land area (in acres and square feet) and potential development (in dwelling units and/or square feet) are summed by composite zone category for further modeling.

PROJECT SPECIFIC PROJECTIONS

A second model workbook was developed that has a series of tables in several worksheets. One worksheet exists for each composite zone category to make projections by category. In the case of Con/Rec and Mixed Use zone categories, separate worksheets exist for each component of the composite zone: residential and non-residential. Factors fed into the projection model include the developable land acreage by composite zone and potential development (dwelling units and/or square footage) from the zoning workbook.

Tables within this workbook allow projections to be made to a specified study horizon year, or allow study area boundaries that are different than the municipal boundaries. Formulas are also embedded in this workbook that convert units to population and square footage of non-residential space into employees. The population and employment projections are further analyzed to project additional sewage flows. These are all examples of the project specific projections that can be made through this model.

To project to a specific horizon period, municipal development trends are required. Until 2000, the Monmouth County Planning Board prepared annual reports that provided detailed information on development activity by municipality. These reports were reviewed for the years 1991 through 2000. Yearly averages of new single family lots and multi-family dwelling units for that period in each municipality were determined. Average square feet of commercial, office, industrial and commercial recreation development were also determined for the same period for each municipality. These numbers were fed into a projection factors table and used throughout the workbook to estimate the number of years it would take to reach the build-out of each zone with vacant land. When no development occurred in one of these categories in a given municipality over the trend period, a factor of 1 dwelling unit or 10 square feet was used, and identified in the workbook. This

allowed the projection formulas to calculate without a mathematical error resulting from a factor of zero, while also assuming that the vacant land would eventually be developed or that expansion of current non-residential uses could occur where the land was available. Furthermore, use of these factors and the choice of a specific horizon period allowed the development of tables that could make projections for that chosen horizon year. For example, if a 20 year study period was chosen in 2002, the horizon date would be projected into the future 20 years: 2022. Projections for the horizon year are provided by multiplying the annual average development factors by the number of years it takes to get to the horizon from the base data year (e.g. assuming 1995 land use/land cover, multiply by 27 years). If/Then statements were embedded in the horizon projection tables to prevent projections that would exceed the possible growth allowed by zoning at build-out.

In 2004 more recent data became available that would allow the trend averages to be updated. Several municipalities, during the Cross Acceptance meetings, expressed a desire to have more recent trends used, as they felt that the development trends they had experienced during the 1990's had changed. The new data was analyzed and a 7 year trend average was calculated for the period 1997-2003. The model was revised to recalculate for all municipalities using these development trends.

For employment estimates, factors of employees per 1000 square feet were originally taken from the Trip Generation Handbook prepared by ITE. This handbook was used because it is an acceptable industry standard that employed a number of available studies to determine specific employment quantity relationships to various uses. For each composite zone category, the ITE use or uses that most closely resembled the make-up of the composite zone provided the applicable employment factors. Where more than one use was applicable, the factors were averaged. Each table that projects employment clearly identified the ITE employment factor or factors applied for that category. In December 2004 the Council on Affordable Housing (COAH) released *Chapter 94, Substantive Rules of the New Jersey Council on Affordable Housing for the Period Beginning Dec. 20, 2004*. In these rules COAH staff included Appendix E, which provided projection factors of employees per 1000 sq. ft. for various uses. Since new numbers were now available specifically for use in New Jersey, the model was immediately revised to substitute the COAH factors for the ITE factors and new runs were prepared for all 53 municipalities as part of the process of Cross Acceptance of the state plan. All model runs after December 3, 2004 used the COAH factors for employment projections.

The workbook is formatted to produce projections by municipality, as several of the factors used are provided on a municipal basis, such as the census person per household ratio used to calculate projected population. The model can, however, be used to estimate change in a part of a municipality, rather than the whole, simply by using a study area boundary when developing the GIS clip and applying ratios related to the developable part of the zone within the study area compared to the overall developable acres of that zone in the municipality.

Summary tables are provided that gather together the additional sewerage flow, population and employment estimates for the horizon year and at build-out. These numbers can be added to base flow, base population, and base employment figures from the year of the data. For example, when using data from the 1995 fly-over, these additional figures need to be added to 1995 base figures.

WORKBOOK REFINEMENTS OVER TIME

The workbooks continue to be further refined, as new information comes to light about the base data. Initial problems with how the raw data was assembled caused a double-counting in some parts of the county, leading to false predictions. It was later discovered that undeveloped parkland was considered developable within the raw data. This was corrected by overlaying municipal parks GIS layers, where available, and recalculating the raw data. Occasionally, large forested highway medians were included as developable parcels. When found, these were removed.

The model can be further manipulated to add new areas for projection. It is possible that HUC 14 data can be included in the future to allow impervious cover projections by HUC 14 subwatersheds so the county could provide this information for the municipalities that require it for their municipal stormwater management plans or for regional stormwater management plans. Trip generation is another area that will be investigated for future addition to the model projection capabilities. However, the land use/land cover data currently available will soon be 10 years old. Unless newer land use/land cover data becomes available to the county Planning Board in the near future, the ability to use the projection model with confidence will be severely limited.

Monmouth County Planning Board Projections Tinton Falls

Date: Mar. 03, 2005

Developable Land By Composite Zone

	Conser- vation Recreation	Single Family Residential	Multi-family Residential	Mixed-Use	Commercial	Office Business	Research Office Warehouse Laboratory	Industrial	Total
1995 Acres of Developable Land	0.0	1030.3	393.9	1368.3	86.0	0.0	52.0	662.2	3592.7

Potential Development

	Conser- vation Recreation Residential Units	Conser- vation Recreation Comm. Square Feet	Single Family Residential Units	Multi-family Residential Units	Mixed-Use Multi-family Residential Units	Mixed-Use Comm. Square Feet	Commercial Square Feet	Office Business Square Feet	Research Office Warehouse Laboratory Square Feet	Industrial Square Feet
Entire Municipality at Build-out	0	0	1189	2006	20341	4186573	933556	0	452850	17306266
Entire Municipality at Horizon	0	0	888	870	870	856260	856260	0	452850	137640

Horizon Year: 2025
Horizon Period: 30
Person Per Household Ratio: 2.56

Population & Employment Projections

	1995 CA Estimate	2000 Census	Model Additional	2025 Projection
Population	-	15053	5606	20659
95 Cross Accepted Employment	6381	-	3346	9727
Households	-	5883	2190	8073

Projections
2025 Population Projection = 20659
2025 Employment Projection = 9727
2000 Employment Projection = 6939
2025 Household Projection = 8073

Monmouth County Planning Board Projections Tinton Falls

Additional Impervious Cover by Composite Zone

Municipality	Composite Zone Categories (in Acres)						Total Area (Acres)
	Conser- vation Recreation	Single Family Residential	Multi-family Residential	Mixed-Use	Commer- cial	Office Business	Research Office Warehouse Laboratory Industrial
Tinton Falls	0.0	170.4	157.7	733.1	63.1	0.0	397.3
							1558.1

Date: Mar. 03, 2005

Municipal Development Projection Factors

dwelling units		square feet			
Sing. Fam.	Multi-fam.	Commerc.	Office	Industrial	Cons/Com
29.6	29	28542	33344	4588	10

Date: Mar. 03, 2005

Source: 7 year annual average trend for the time period 1997-2003 was calculated for each municipality based on the MCPB database of subdivision and site plan approvals.

Employment Projections Factors

	Cnsv Cm	Mx CM	Comm	Off Bus	ROWL	Ind
emp/1000sf	1	1	1	3	3	2
use group	*	M	M	B	B	F

Source: Chapter 94, Substantive Rules of the New Jersey Council on Affordable Housing for the Period Beginning Dec. 20, 2004

*Note: Neither the COAH Use Groups nor the ITE Trip Generation Handbook had an employment factor for a use similar to Conservation/Recreation Commercial. After a cursory review of ConRec applications in Monmouth County, a factor of 1 emp./1000 sf was determined to be acceptable.

**RESOLUTION OF THE TINTON FALLS PLANNING BOARD
ADOPTING A STORMWATER MANAGEMENT PLAN AS AN INTEGRAL ELEMENT OF
THE MASTER PLAN OF THE
BOROUGH OF TINTON FALLS**

WHEREAS, the Planning Board of the Borough of Tinton Falls adopted a comprehensive Master Plan pursuant to N.J.S.A. 40:55D-28 and 89; and

WHEREAS, N.J.A.C. 7:8-4.3 requires that a municipal planning board adopt a stormwater management plan; and

WHEREAS, N.J.A.C. 7:8-4.2 sets forth the requirements to be included in a stormwater management plan; and

WHEREAS, the Planning Board of the Borough of Tinton Falls desires to comply with the requirements of the Administrative Code and further intends to address stormwater issues in a comprehensive, well-planned manner; and

WHEREAS, Leon S. Avakian, P.E., the Borough engineer, prepared a Plan entitled "Stormwater Management Plan Adoption, Borough of Tinton Falls," dated April 6, 2005; and

WHEREAS, the Planning Board of the Borough of Tinton Falls, held a public hearing on April 6, 2005 regarding the Stormwater Management Plan, for which notice was duly provided pursuant to N.J.S.A. 40:55D-13; and

WHEREAS, the Board provided a copy of the proposed Stormwater Management Plan to the County Planning Board at least twenty days prior to the public hearing; and

WHEREAS, the Board permitted public comment but none was received; and

WHEREAS, the Planning Board has determined that the Stormwater Management Plan is consistent with N.J.A.C. 7:8-4.2 and the goals and objectives of the Master Plan and that adoption and implementation of same as an integral part of the Master Plan is in the public interest and protects public health and safety and promotes the general welfare; and

NOW THEREFORE BE IT RESOLVED by the Planning Board of the Borough of Tinton Falls, County of Monmouth, State of New Jersey that the Stormwater Management Plan is adopted; and

BE IT FURTHER RESOLVED that a copy of the adopted Plan shall be transmitted to the County Planning Board within thirty days of the date of this Resolution; and

BE IT FURTHER RESOLVED that the Planning Board shall reexamine the Stormwater Management Plan at each reexamination of the entire Master Plan.

ROLL CALL

McFadyen:
Pocaro:
McNamara:
Donlon:
Turning:

yes
yes
yes
yes
yes

Cunningham:
Molloy:
Perry:
Wagner:
Purcell:

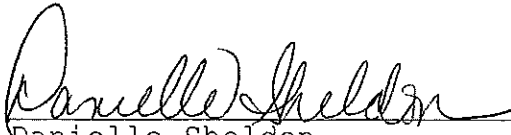
yes
absent
yes
yes
yes

This Resolution adopted this 6 day of April, 2005 memorializes the action taken at a meeting of the Tinton Falls Planning Board on April 6, 2005, with the roll call vote on the memorialization as follows:

ROLL CALL ON MEMORIALIZATION

McFadyen:	<u>yes</u>	Cunningham:	<u>yes</u>
Pocaro:	<u>yes</u>	Molloy:	<u>absent</u>
McNamara:	<u>absent</u>	Perry:	<u>absent</u>
Donlon:	<u>yes</u>	Wagner:	<u>yes</u>
Turning:	<u>yes</u>	Purcell:	<u>absent</u>

I hereby certify that the foregoing is a true copy of a Resolution of the Tinton Falls Planning Board memorialized on April 27th, 2005.


Danielle Sheldon
Planning Board Secretary

