

**TOWNSHIP OF
WINFIELD
MUNICIPAL
STORMWATER
MANAGEMENT PLAN**

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Introduction

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for the Township of Winfield (Athe Township@) to address stormwater-related impacts. The creation of this plan is required by N.J.A.C.7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development, defined as projects that disturb one or more acre of land. These standards are intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides baseflow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities.

A Build-out@ analysis has not been included in this plan, since there is a combined total of less than one square mile of vacant or agricultural lands within the Township. The plan also addresses the review and update of existing ordinances and other planning documents to allow for project designs that include low impact development techniques. The final component of this plan is a mitigation strategy for when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

Goals

The goals of this MSWMP are to:

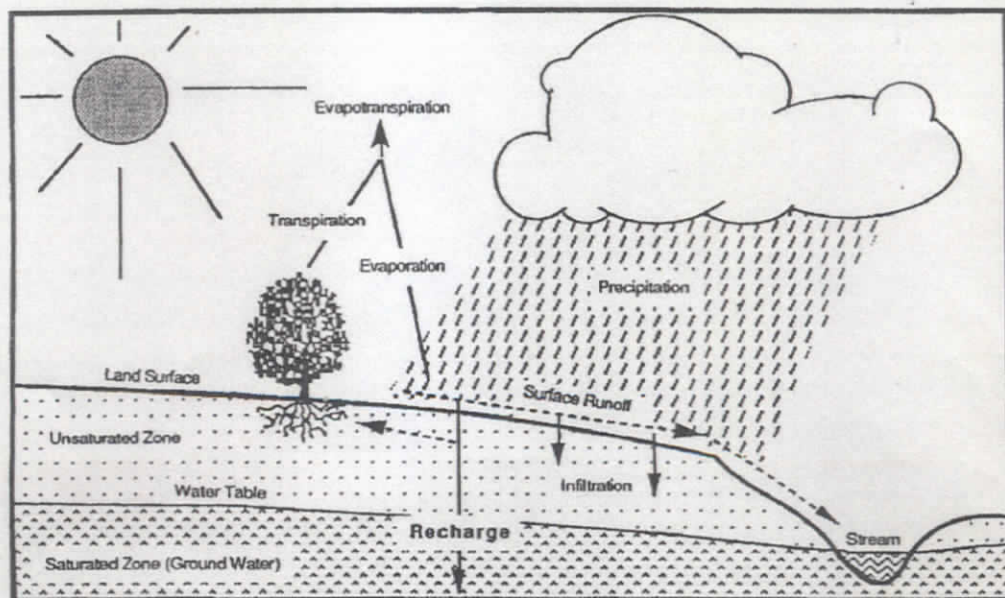
- ! reduce flood damage, including damage to life and property;
- ! minimize, to the extent practical, any increase in stormwater runoff from any new development;
- ! reduce soil erosion from any development or construction project;
- ! assure the adequacy of existing and proposed culverts and bridges,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

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

Stormwater Discussion

Land development can dramatically alter the hydrologic cycle (See Figure C-1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration. Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in down-stream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can destroy habitat from which some species cannot adapt.

Figure C-1: Groundwater Recharge in the Hydrologic Cycle



Source: New Jersey Geological Survey Report GSR-32.

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

In addition to increased pollutant loading, land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and raise the temperature of the downstream waterway, adversely affecting cold water fish species such as trout. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

Background

Winfield is an established suburban community and encompasses 0.2 square miles in south-central Union County, New Jersey. The largest land use category is residential. Since most of the Township has been developed, the overall development pattern is not likely to change significantly. The population of the Township decreased from 1,785 in 1980, to 1,576 in 1990, then to 1,514 in 2000. Figure C-2 illustrates that there are no waterways in the Township, although the North Branch of the Rahway River encircles approximately 80% of the municipality. Figure C-3 depicts the Township boundary on the USGS quadrangle map.

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics. No bodies of water in, or around, the Township are impaired. The NJDEP is required to develop a Total Maximum Daily Load (TMDL) for pollutants for each waterway in the state that is impaired.

A TMDL is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for one or more of its designated uses. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and non-point source, which includes stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation strategies may include improved stormwater treatment plants, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other BMPs.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)) (Integrated List) is required by the federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report

presents the extent to which New Jersey waters are attaining water quality standards, and identifies waters that are impaired. Sub-list 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.

Semi-annual inspections of the North Branch of the Rahway River reveal no health concerns at this time.

The Township has exhibited severe flooding problems in 1971 and 1973. Drainage improvements coinciding with the reconfiguration of the old Winfield Circle in the 1980's have eliminated all of the flooding in the Township.

The high imperviousness of the Township has significantly decreased groundwater recharge. The groundwater recharge requirement, according to NJAC 7:8-5.4(a)2ii, does not apply to projects within the "Urban Redevelopment Area." Urban Redevelopment Area is defined by NJAC 7:8-1-2 as previously developed portions of areas delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1). Since Winfield is located within PA1, the groundwater recharge requirement is only applicable to projects located on vacant land or on the undeveloped portions of previously developed sites. Previously developed portions are exempt.

Wellhead protection areas, also required as part of the MSWMP, are shown in Figure C-4. This is the area generally west and east of Wavecrest Avenue between Seafoam Avenue and Spray Terrace.

Figure C-2: Township of Winfield and Its Waterways

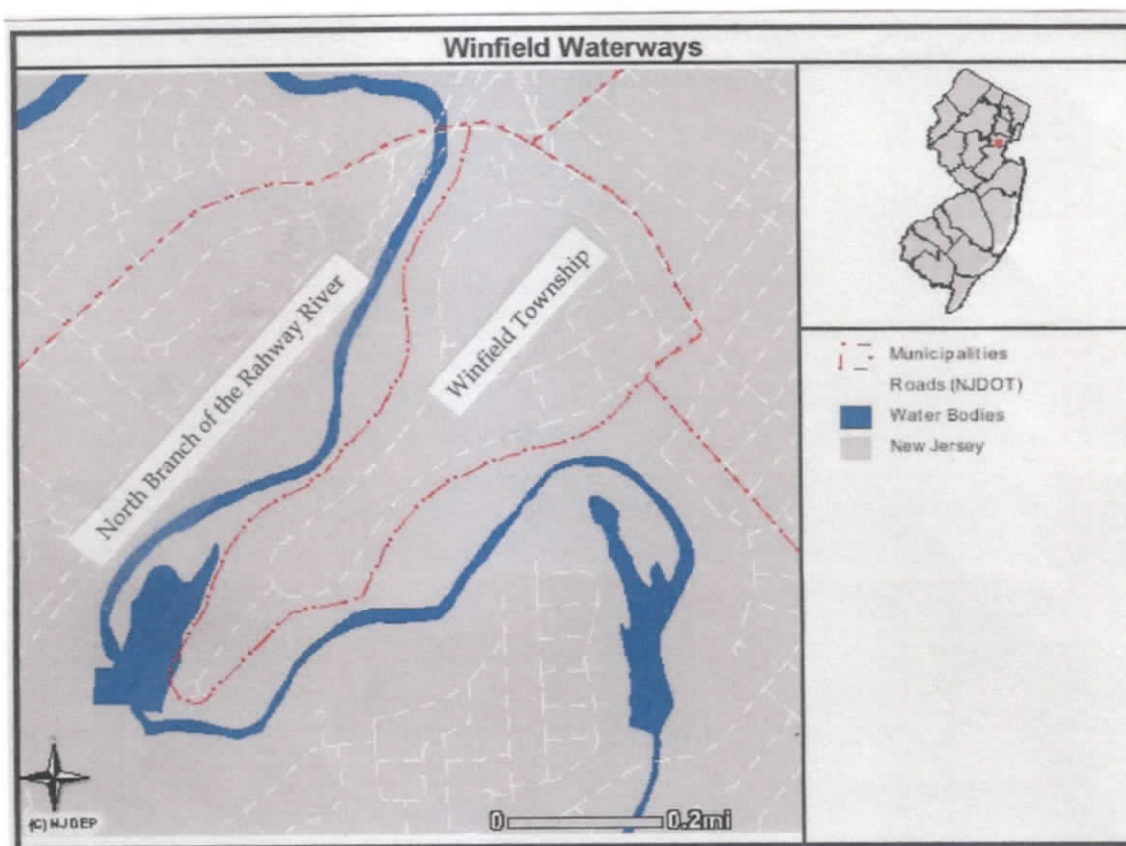


Figure C-3: Township of Winfield Boundary on USGS Quadrangle

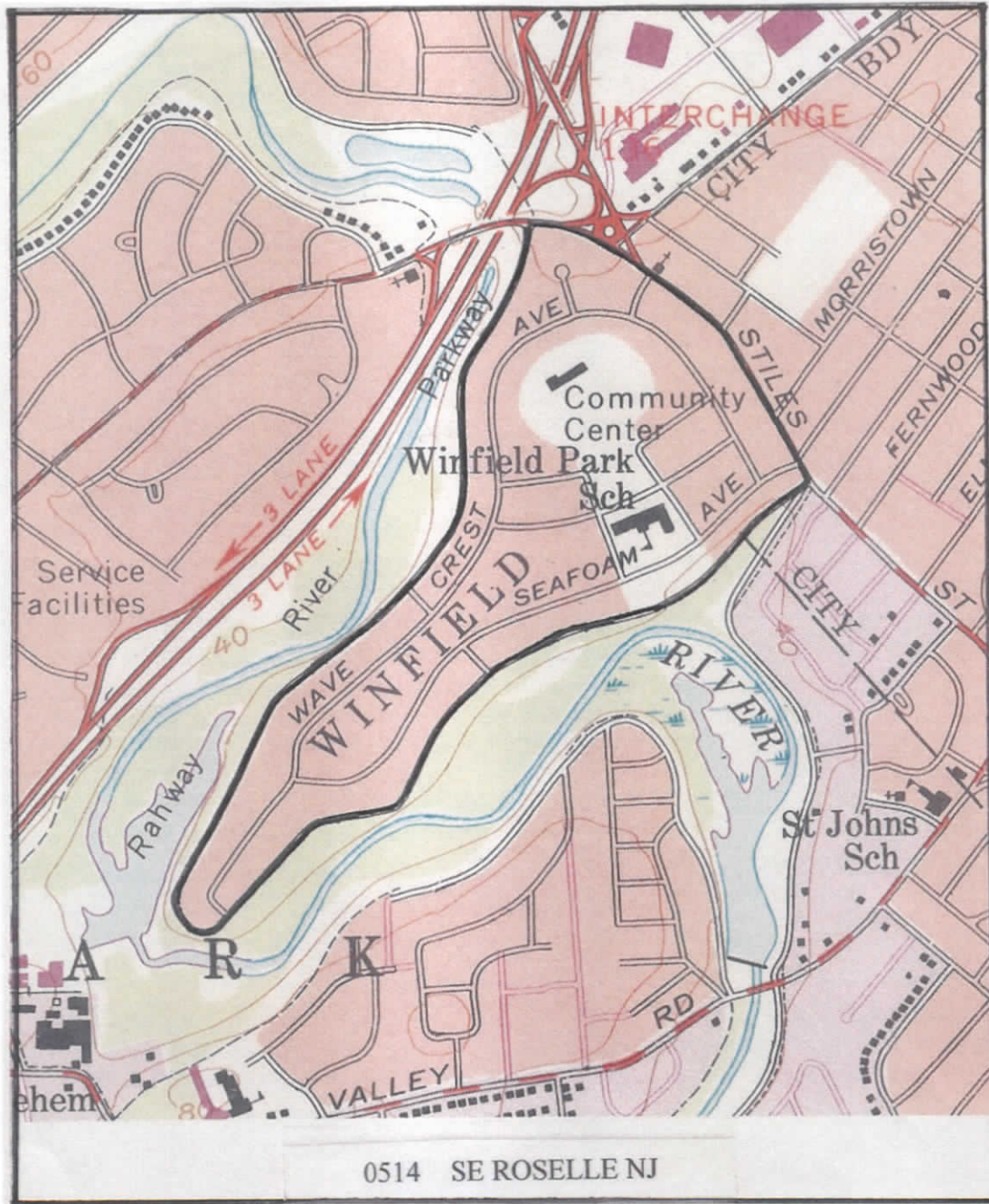
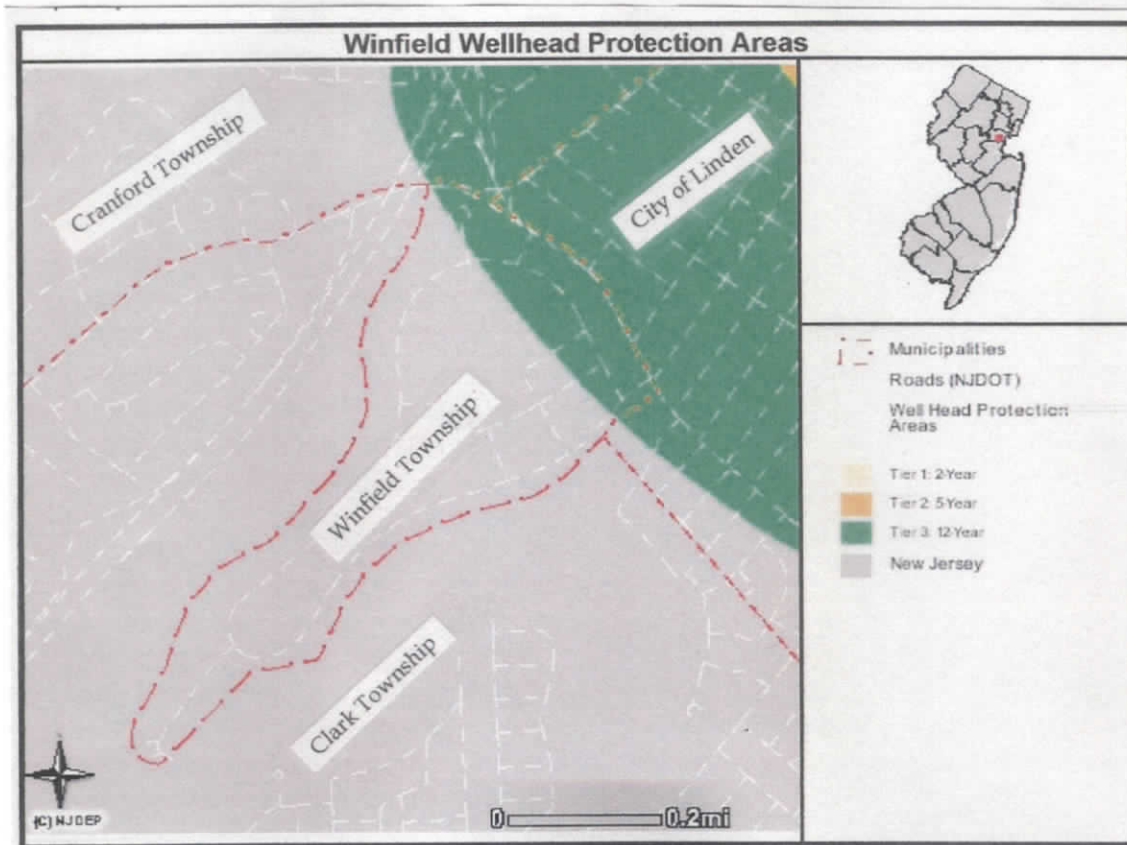


Figure C-4: Wellhead Protection Areas in the Township of Winfield



Design and Performance Standards

Winfield will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. The design and performance standards include the language for maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins. The ordinances will be submitted to the county for review and approval within 24 months of the effective date of the Stormwater Management Rules.

During construction, Township inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed. An as-built plan and certification from the design engineer that the construction meets all Stormwater Regulations will be required at the conclusion of the project.

Plan Consistency

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

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

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

Nonstructural Stormwater Management Strategies

Winfield has reviewed its ordinances and finds that they are consistent with the intent of the Stormwater Regulations. No revisions appear necessary at this time. If it is discovered later that revisions have to be made, they will be submitted to the county review agency for review and approval within 24 months of the effective date of the Stormwater Management Rules. A copy will be sent to the Department of Environmental Protection at the time of submission.

Land Use/Build-Out Analysis

A land use analysis for the Township was conducted. Figure C-5 illustrates the existing land use in the Township based on 1995/97 GIS information from NJDEP. Figure C-6 illustrates the one (1) HUC14 area within the Township. There is no zoning map for the Township.

If a municipality can document that it has a combined total of less than one square mile of vacant or agricultural lands, the municipality is not required to complete a build-out analysis. Since the entire Township is only 0.2 square miles, a build-out analysis and resultant pollutant loads are not required.

Figure C-5: Land Use within the Township of Winfield

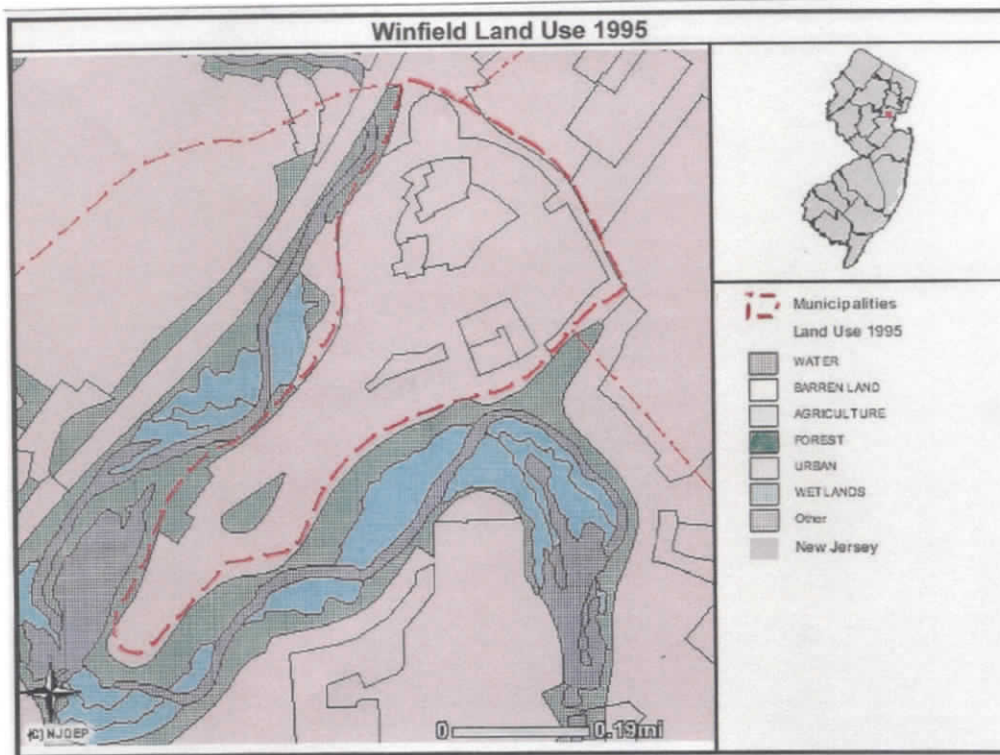
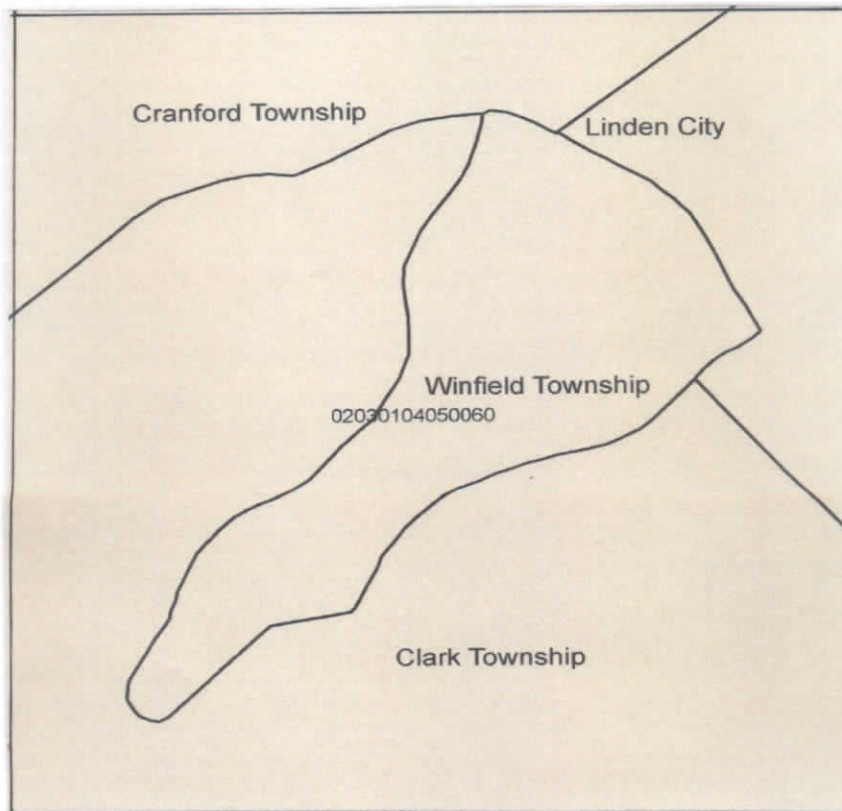


Figure C-6: Hydrologic Units (HUC14s) within the Township of Winfield



Mitigation Plans

If the Township grants a variance or exemption from the design and performance standards of a municipal stormwater management plan, the developer shall submit a mitigation plan and project. The plan can offset the effect on stormwater quantity control, and/or stormwater quality control that was created by granting the variance or exemption.

The mitigation project must be implemented in the same drainage area as the proposed development. The project must provide additional groundwater recharge benefits, or protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Municipal Stormwater Management Plan. The developer must ensure the long-term maintenance of the project, including the maintenance requirements under Chapters 8 and 9 of the NJDEP Stormwater BMP Manual. The developer shall select a project to compensate for the deficit from the performance standards resulting from the proposed project in conjunction with the Township Engineer. Currently, there are no listed projects needing additional performance standards. If any develop in the future, they will be added to this Management Plan.

Due to the lack of vacant or developable land, it is anticipated that the majority of the mitigation projects proposed will result in retrofitting/rehabilitation of existing stormwater facilities and natural infrastructures. Therefore, the Applicant may select one of the following strategies to be developed into a potential mitigation project. More detailed information may be available from the Township's Engineering Department. It is the developer's responsibility to provide a detailed study of any proposed mitigation project, and provide the Township Engineer with a proposed mitigation plan for review and approval.

➤ **Groundwater Recharge**

The groundwater recharge requirement, according to NJAC 7:8-5.4(a)2ii, does not apply to projects within the "Urban Redevelopment Area." Urban Redevelopment Area is defined by NJAC 7:8-1-2 as previously developed portions of areas delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1). Since Winfield is located within PA1, the groundwater recharge requirement is only applicable to projects located on vacant land or on the undeveloped portions of previously developed sites. Previously developed portions are exempt.

➤ **Water Quality**

Retrofit drainage systems on existing municipally owned properties to provide water quality in accordance with NJDEP Standards. Due to site constraints, the retrofit BMP within parking lots may be installed underground and cannot reduce the existing number of parking spaces. Parking lots include one lot near the Housing Authority and stores (0.35 acres) and one at the Union County Parkway near Spray Terrace (0.12 acres).

➤ **Water Quantity**

Install stormwater management measures in existing municipally owned properties to reduce the peak flow from the upstream development on the receiving stream.

Storm sewer cleaning.

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