

**BOROUGH OF PROSPECT PARK  
PASSAIC COUNTY, NEW JERSEY**

**MUNICIPAL STORMWATER MANAGEMENT PLAN**

April 2006

Prepared By  
**H2M Associates, Inc.**

**H2M Project No. ZBPP-0601**

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## **INTRODUCTION**

This Municipal Stormwater Management Plan (MSWMP), for a tier “A” Municipality, documents the strategy for the Borough of Prospect Park (“the Borough”) to address stormwater-related impacts on State open waters and the environment. The creation of this plan is required by the N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains 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 acres 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 been included, and is based upon the existing zoning of land available for development. The plan also addresses the review and update of existing ordinances, the Township Master Plan, and other planning documents to allow for project designs that include low impact development techniques. The final component of the Borough of Prospect Park’s MSWMP is a mitigation strategy for those cases where 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, which are intended to reduce 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 practical, an increase in nonpoint source (NPS) 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



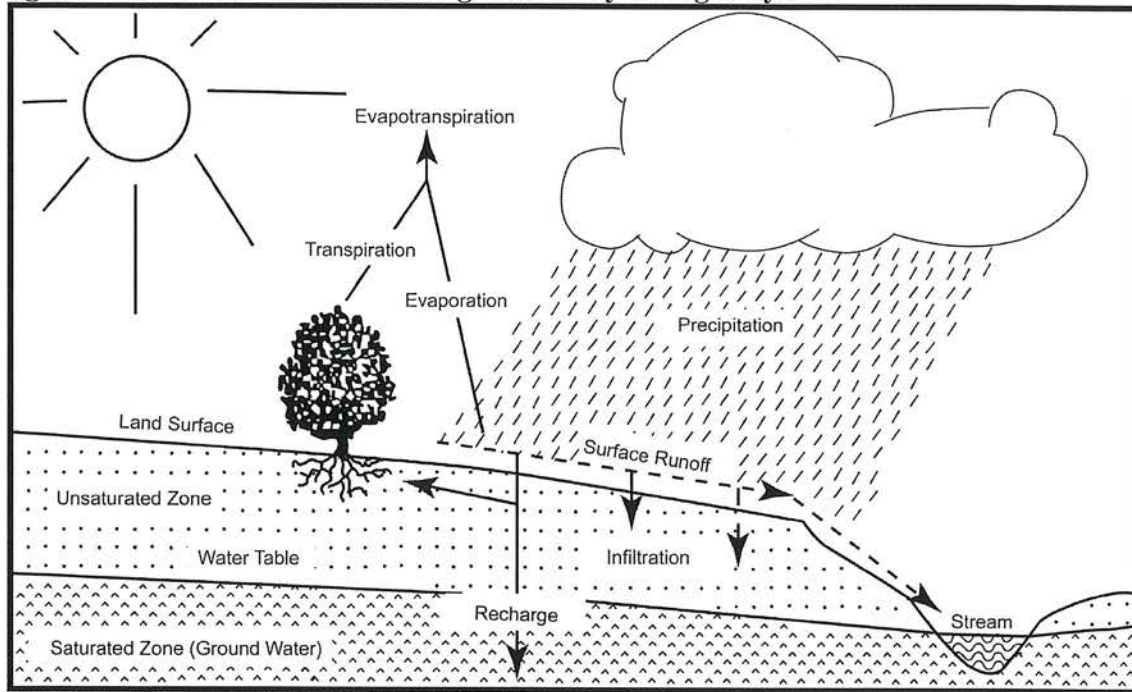
- Protect public safety through the proper design and operation of stormwater basins.

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, or 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 potential for evapotranspiration and infiltration. Clearing and grading a site can also remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration capacity, resulting in increased volumes and rates of stormwater runoff. Impervious areas that are connected through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This reduction in travel time modifies the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands, as well as biological communities that depend on base flows. Additionally erosion and sedimentation caused by stormwater 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 increasing in runoff peaks and volumes, as well as associated loss of groundwater recharge, land development often results in the accumulation of pollutants on the newly developed land surface. During rain events, these pollutants can be mobilized and transported to streams and other waterbodies. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended solids, hydrocarbons, pathogens, and nutrients.

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

## BACKGROUND

The Borough of Prospect Park encompasses 298 acres (0.467 square miles) area in Passaic County, New Jersey. The Borough is an older established community where land use has been stable with minimal new development. The population of the Borough had



an increase of 14.4% from 1990 to 2000. The population as reported by the US Census is as follows:

CENSUS YEAR	POPULATION
1980	5,142
1990	5,053
2000	5,779

This population increase has not resulted in significant development since, the Borough was previously essentially built-out. Instead, the population density has increased over the years. Since there has not been significant development in the Borough in recent times, there has not been a sizable change in volume of stormwater runoff and pollutant loads to the waterways in the municipality. Figure C-2 illustrates the waterways in the Township. Figure C-3 depicts the Township boundary on the USGS quadrangle maps.

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. The Borough is bordered by the Passaic River to the Southeast, which is moderately impaired. On the Northwestern border of the Borough is the Molly Ann Brook, which is severely impaired.

In addition to the AMNET data, the NJDEP and other regulatory agencies collect water quality chemical data on the streams in the state. This data indicates that the instream total phosphorus concentrations and fecal coliform concentrations of the Raritan River and Millstone River frequently exceed the state's criteria. This means that these rivers are impaired waterways, and the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for these pollutants for each waterway. A TMDL is a calculation of the maximum amount of a particular pollutant that a waterbody can receive and still meet water quality standards. The allowable load consist of NJPDES permitted stormwater and wastewater discharges, nonpoint sources including stormwater runoff from agricultural areas and residential areas, and 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. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.

Other than the water quality problems within the bordering waterbodies, the Borough of Prospect Park has not exhibited any severe water quantity problems from flooding, stream bank erosion, or diminished base flow in its streams. Since the Borough has been built-out for some time there has not been an increase in stormwater runoff, and the existing stormwater system has proven adequate. The high imperviousness of the Borough from its high density has decreased groundwater recharge in the Borough, except in the Northern portions within the Borough's Open Space. The industrial quarry located within the Borough additionally has a low groundwater recharge rate. A map of the groundwater recharge areas for the Borough are shown in Figure C-4. Several public groundwater wells are located in the adjacent Borough of Hawthorn. These wells place the eastern portion of the Borough in a Tier 3 wellhead protection area. The wellhead protection areas are shown in Figure C-5.

## **DESIGN AND PERFORMANCE STANDARDS**

The Borough 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 Passaic County for review and approval within 24 months of the effective date of the Stormwater Management Rules.

During construction, the Borough's inspectors will observe the construction of future projects to ensure that proposed stormwater management measures are constructed and function as designed.

## **PLAN CONSISTENCY**

The Borough of Prospect Park is not within a Regional Stormwater Management Planning Area, and no TMDLs have been developed for waters within the Borough. 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 accordingly.



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

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

## **NONSTRUCTURAL STORMWATER MANAGEMENT STRATEGIES**

The Borough has reviewed its master plan and ordinances, and has compiled a list of sections in the Borough land use and zoning ordinances that are to be modified to incorporate nonstructural stormwater management strategies. Once, these sections of the ordinances have been modified, 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 New Jersey Department of Environmental Protection at the time of submission.

For preparation of this Stormwater Management Plan, a review of the Borough of Prospect Park's Code, entitled "Zoning Chapter 90" was reviewed, to incorporate nonstructural stormwater management strategies. Several changes are being proposed for this chapter as follows:

**Section 90-15 D: Off-Street Parking Paving:** This section states that all off-street parking spaces and driveways shall be paved with asphalt or concrete. This section should be amended to allow the use of pervious paving material if appropriate to minimize stormwater runoff and promote groundwater recharge.

**Section 90-20A-5 Parking:** This section states that shade trees shall be provided along streets and in parking areas. This code should be amended to require the use of native vegetation, which requires less fertilization and watering than non-native species. In addition, this section requires that a parking area to buffer and enhance the appearance of the off-street parking areas in or adjacent to residential zone and used by more than three (3) vehicles shall be screened by a fence or hedge. This section will be amended to encourage the use of natural vegetated swales for the water quality design storm, with overflow for larger storm events into storm sewers.

**Section 90-20A-7: Sidewalks:** This section should be modified to require developers to design sidewalks to discharge stormwater to neighboring lawns where feasible, in order



to disconnect impervious surfaces. The section will also allow developers to use permeable paving materials to decrease the impermeable area of the site.

**Stormwater Management:** A new section will be added to the code, which will reference the Borough's Stormwater Management Ordinance, as described previously in this document. Additionally all new drainage facilities are to be NJPDES compliant, in addition to having the current New Jersey Best Management Practices (BMPs) implemented.

## **LAND USE/BUILD-OUT ANALYSIS**

The Borough has an area of 298 acres (0.467 square miles), of which 26.37 acres (0.04 square miles) are zoned as General Recreation. This acreage constitutes the Borough's only vacant land. All other land within the borough is currently built out, zoned residential, commercial, or industrial quarry. Since the Borough's total area is less than one square mile, no build-out analysis has been performed.

## **MITIGATION PLANS**

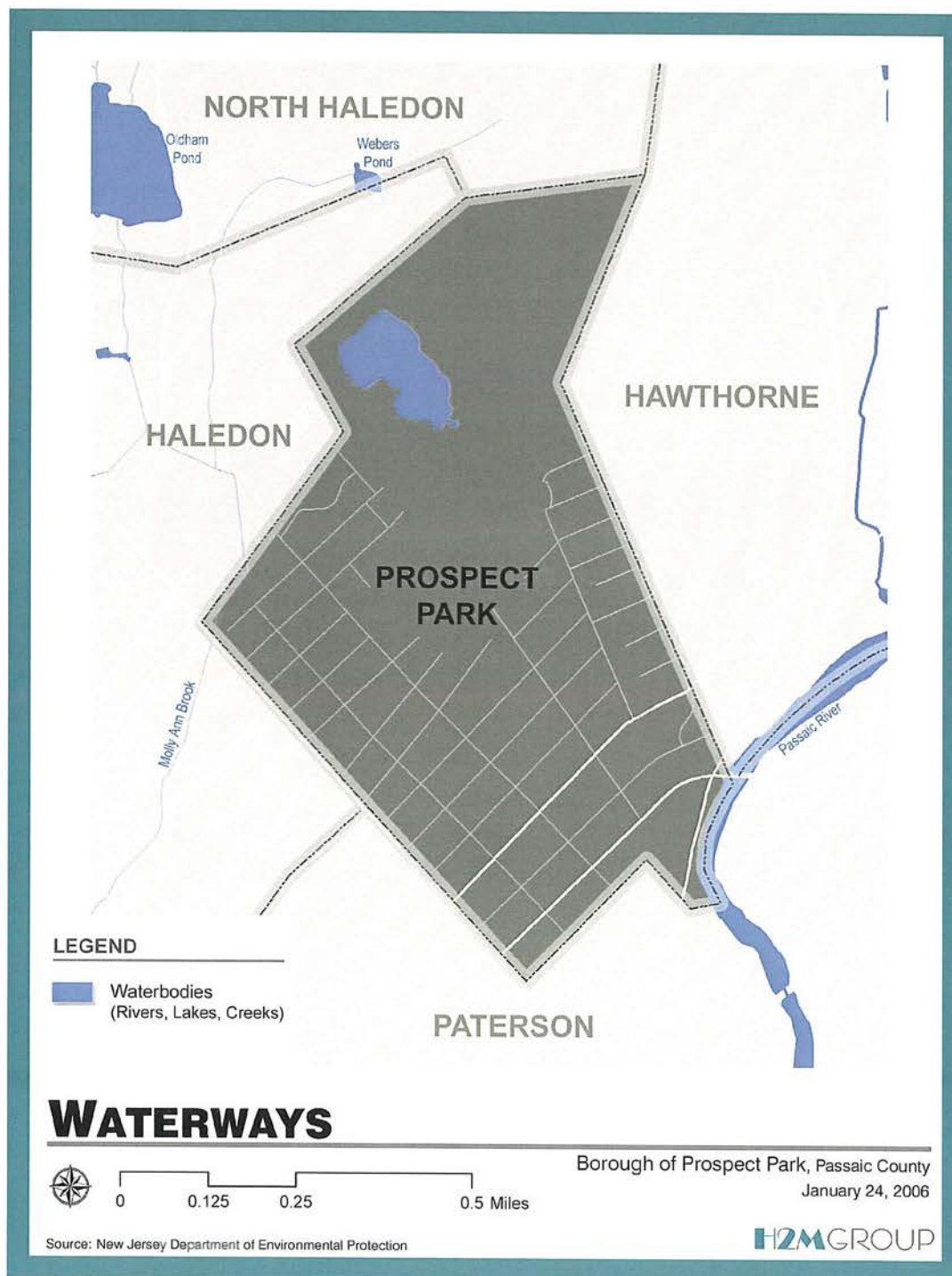
A mitigation plan will be provided for a proposed development that is granted a variance or exemption from the stormwater management design and performance standards.

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.

## **CONCLUSION**

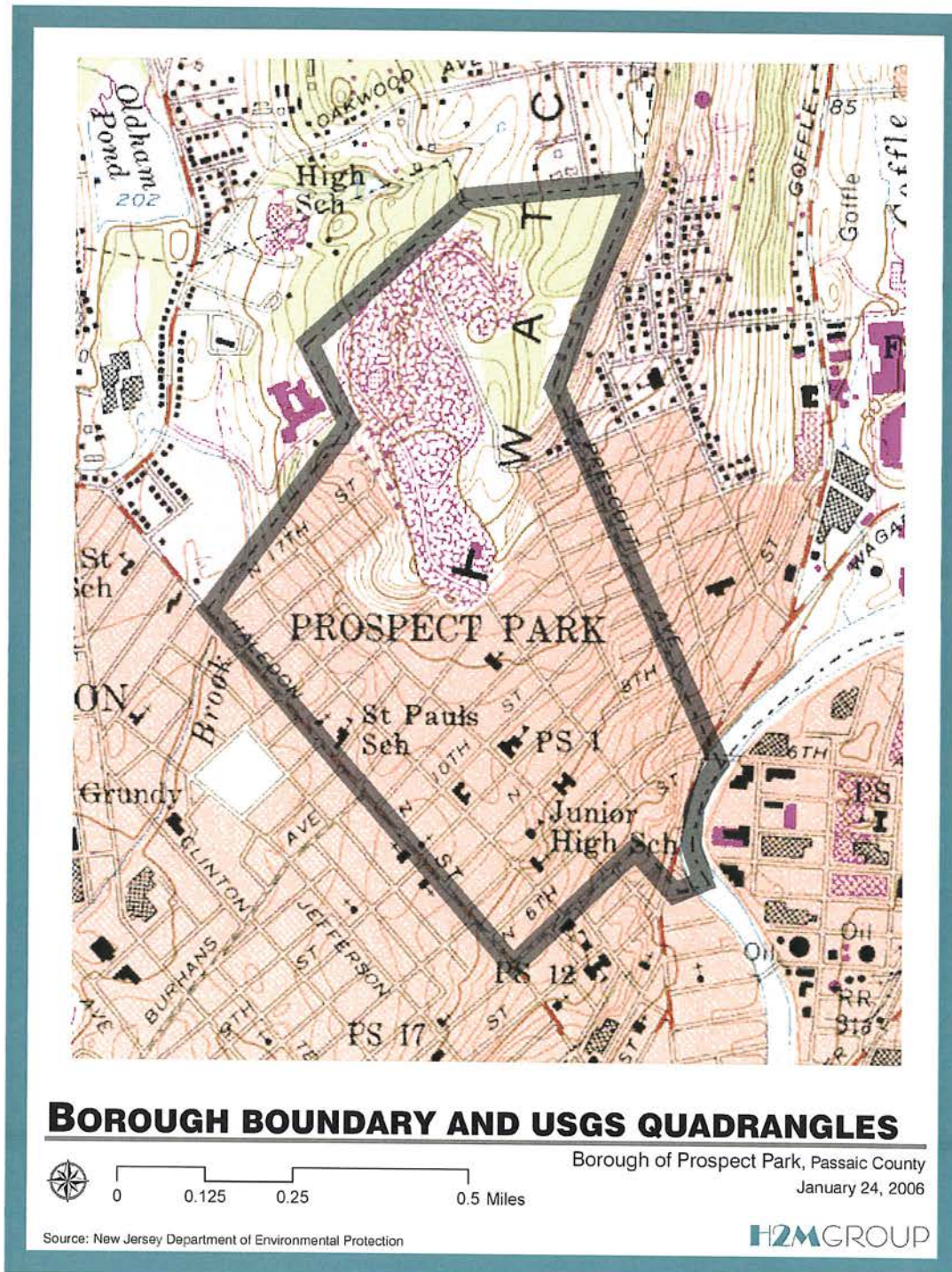
Upon acceptance of this Stormwater Management Plan by the NJDEP and Passaic County, the Borough of Prospect Parks Stormwater Management Plan will be implemented in accordance to New Jersey Department of Environmental Protection requirements following the Implementation Schedule of Statewide Basic Requirements.

**Figure C-2: Township and its Waterways**



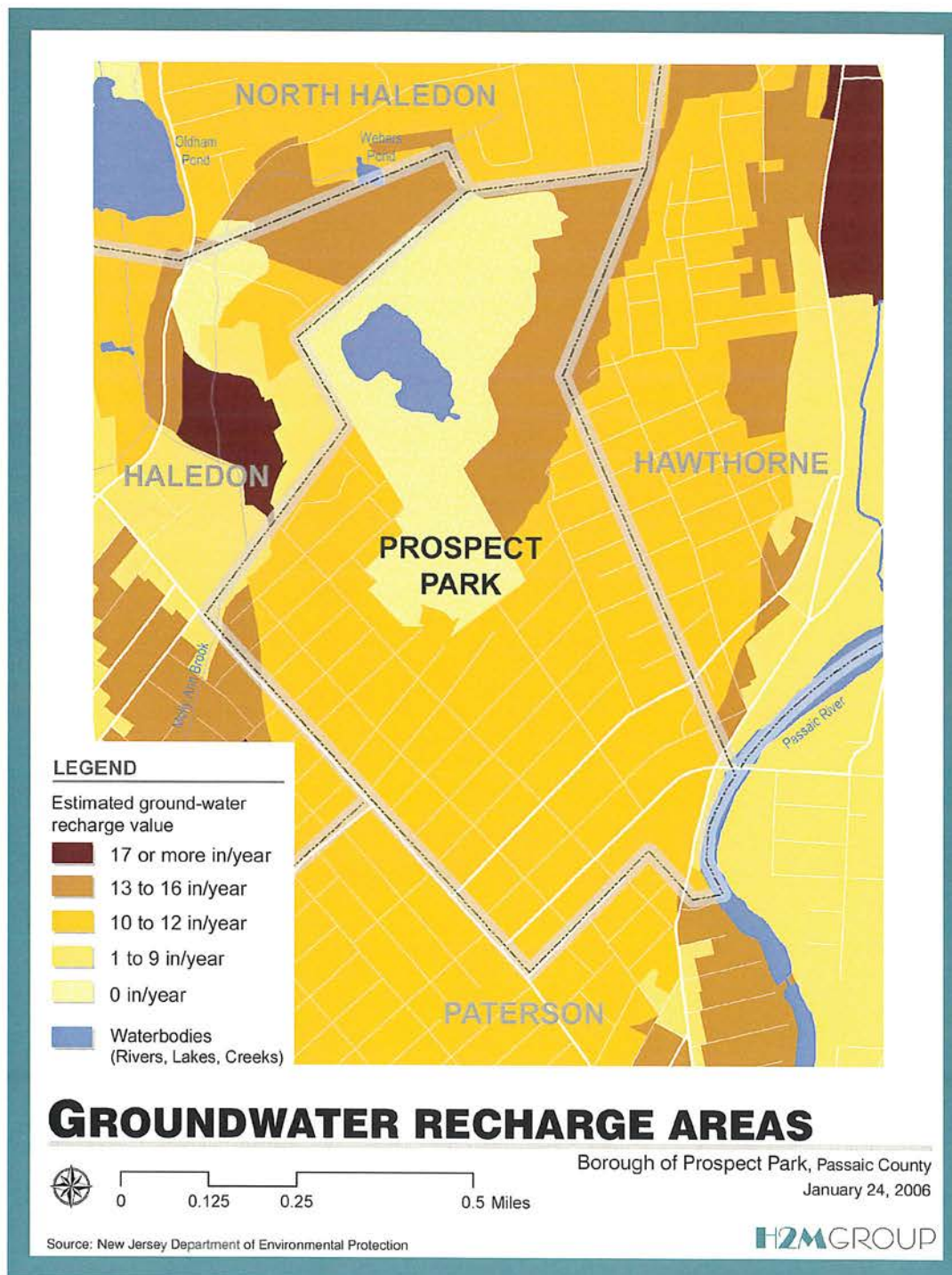


**Figure C-3: Township Boundary on USGS Quadrangles**





**Figure C-4: Groundwater Recharge Areas in the Township**





**Figure C-5: Wellhead Protection Areas in the Township**

