FREEHOLD TOWNSHIP

Monmouth County, New Jersey

Stormwater Management Plan

March 3, 2005
Revised August, 2006

Prepared By: Freehold Township Engineering Department

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Introduction

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for Freehold Township ("the Township") to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, storm-water 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 base flow 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 in this plan based upon existing zoning and 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 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.
- Development and enforcement of this SWMP in accordance Section 13-1 of Township of Freehold's current Master Plan.

Some of the Township's Master Plan objectives, principals, assumptions, policies and standards that also apply to the goals of the Stormwater Management Plan:

- To promote the establishment of appropriate population densities in locations that will contribute to the well being of persons, neighborhoods and preservation of the environment.
- To promote a desirable visual environment through creative development techniques which respect the environmental qualities and constraints of the Township and of particular sites.
- To encourage the preservation and restoration of historic buildings and sites within the Township in order to maintain the heritage of Freehold Township for the enjoyment of future generations.
- Protection of natural and environmental resources including floodplains, wetlands, marsh, and aquifer recharge areas, and areas suitable for public and quasi-public recreation activities.
- To protect and enhance the environmental quality of the Township.

To achieve each of these goals, the following outlines specific stormwater design and performance standards for new development, addresses what is being done to mitigate stormwater related problems throughout the township, and proposes stormwater management retrofits 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. The following is a list of actions the Township of Freehold has taken or will take to achieve the goals listed above.

The Township of Freehold has previously enacted a floodplain ordinance that does not allow development within the floodplain.

The Township of Freehold has, since 1980, required the installation of stormwater management basins. The Township of Freehold has also required the reduction of stormwater discharges since they were adopted by the NJDEP.

The Township of Freehold requires all applicants to obtain a Soil Erosion and Sediment Control Permit to reduce erosion.

The Township of Freehold does not have any undersized culverts or bridges in town. However, as the existing infrastructure needs replacement, the Township of Freehold will assure that replacement culverts are adequately sized.

In the past the Township of Freehold did not allow recharge systems as part of it's overall stormwater management regulations due to a high failure rate and high maintenance requirements. Although, recently the township has allowed roof runoff to be recharged and will also allow site runoff to be recharged if the applicant can prove the soils are acceptable.

As discussed above the Township of Freehold has followed the NJDEP's lead as it relates to water quality and will continue to utilize the latest Regulations as they relate to water quality. The Township of Freehold has also adopted Litter, Waste, and Pet Waste ordinances prohibiting non-point sources of pollution.

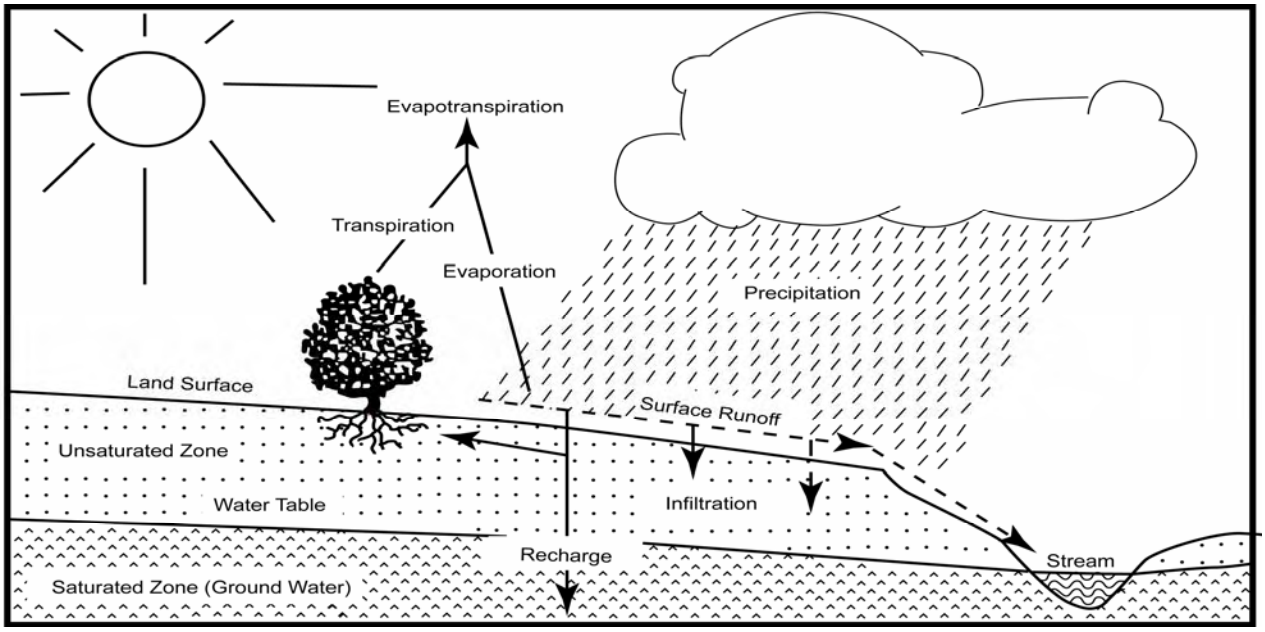
The Township of Freehold is currently inventorying all the streams in town to determine where streams need to be restored. These restoration projects will be developed and implemented either by the Township of Freehold or by developers looking to develop in the identified areas.

All The Township of Freehold's detention basins are designed and operated with the protection of the public in mind. All class IV structures are inspected to ensure that they are structurally sound.

Stormwater Discussion

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

Figure 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.

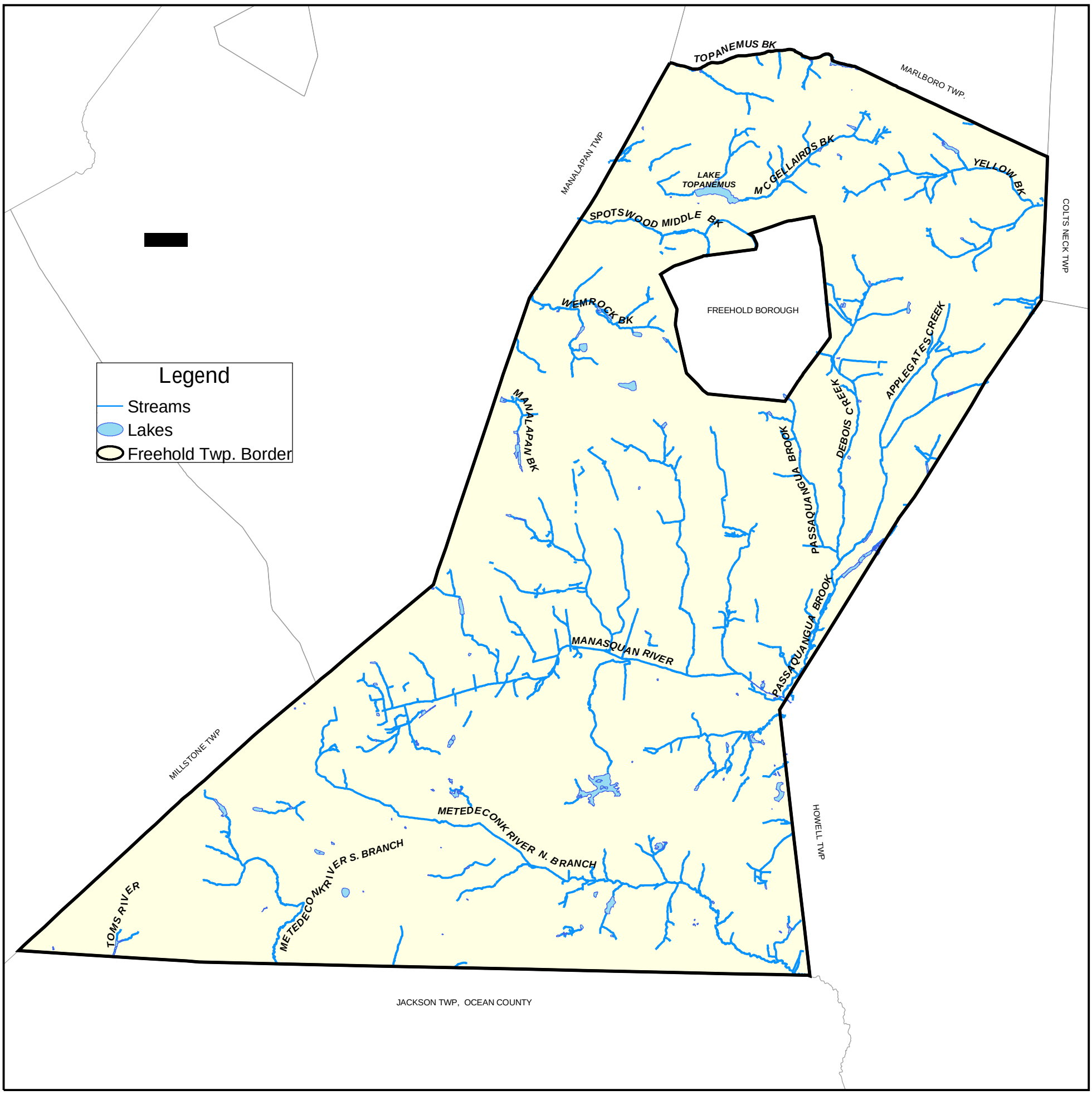
Background

Freehold Township encompasses a 39 square mile area in central Monmouth County, New Jersey. In recent years, the Township has seen significant development, the population of the Township has increased from 19,202 in 1980, to 24,710 in 1990, to 31,537 in 2000. This population increase has resulted in considerable demand for new development; changes in the landscape due to development have increased stormwater runoff volumes and pollutant loads to the waterways of the municipality. Figure 2 illustrates the waterways in the Township. Figure 3 depicts the Township boundary on the USGS quadrangle maps.

Freehold Township has always taken a proactive approach to land development, in 1953 it created the Township Planning Board, and adopted it's first Zoning Ordinance and Land Subdivision Regulations in accordance with the New Municipal Land Use Act of 1953. In 1964, the Township prepared it's first Master Plan which was subsequently adopted in October of that year. In 1965, the Township adopted a major new zoning ordinance which created one acre zoning in areas where zoning previously allowed small lots. Many of the larger small lot developments still existing in the Township had already been constructed prior to this change. In 1966, the Township adopted regulations requiring the technical review of all Site Plans and Subdivisions. In 1980, the Township passed an Ordinance requiring that developers provide drainage calculations demonstrating no impacts to downstream properties.

Promulgated by The Municipal Land Use Law Amendment of February, 1981 the Township began to prepare a Stormwater Management Plan, as an addition to their Master Plan. Utilizing grants and guidelines developed by the NJDEP, ordinances requiring Major Development to provide onsite detention basins to mitigate soil erosion, requiring subsurface drainage designed to encourage ground water recharge, where feasible, were developed and implemented by the Township in 1981.

Since then several updates where added to the Stormwater Ordinances paralleling changes in NJDEP regulations. In 1974, the Township Environmental Commission prepared a Natural Resources Inventory. The inventory presents data on natural resources including topography, geology, hydrology, vegetation, soils air quality, and aesthetic areas. In addition, the inventory provides a series of maps delineating topography, floodplains, geology, soils, slopes, septic suitability, foundation limitation, vegetation, historic and aesthetic sites, and average depth to water table. In 1980, the Township adopted a ground water protection ordinance in order to protect the ground water recharge areas in the Township. Pursuant to this ordinance, land development is restricted from identified recharge areas as well as from areas where depth to seasonal high ground water is less than five feet. The effect of this ordinance has been to discourage development in several areas of the Township where the ground water table is near the surface and the potential for water quality degradation is severe.



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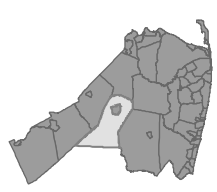
This map was developed using Freehold Township data.
Additional data includes NJDEP GIS data.

Freehold Township Engineering
3/21/05

FIGURE-2

STREAMS

FREEHOLD TOWNSHIP
Monmouth County, New Jersey



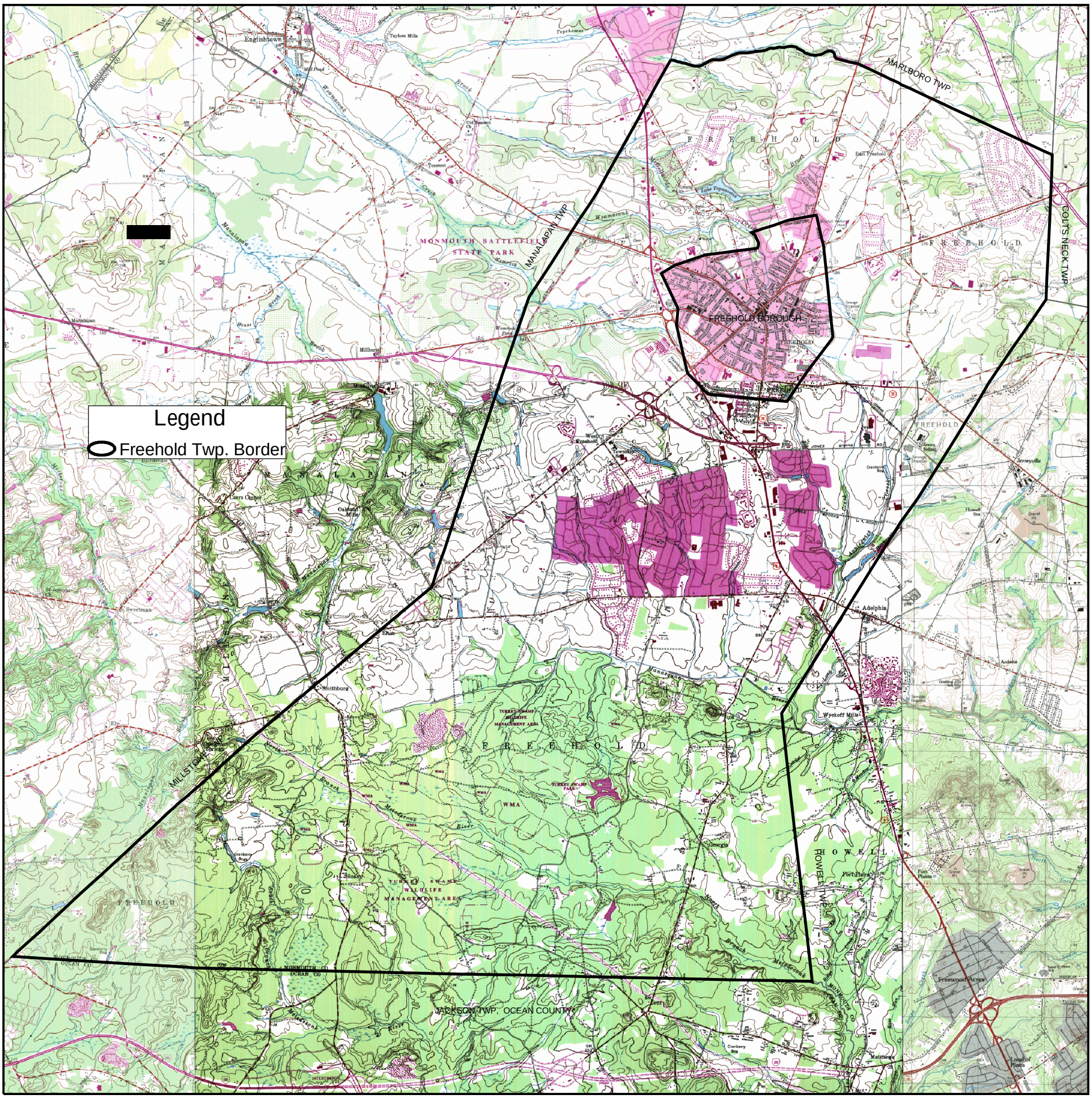


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FIGURE-3

FREEHOLD TOWNSHIP USGS QUADRANGLES

FREEHOLD TOWNSHIP
Monmouth County, New Jersey

This map was developed using Freehold Township data.
Additional data includes NJDEP GIS data. USGS Freehold Quad, Marlboro Quad, Roosevelt Quad, Adelphia Quad, and Farmingdale Quad.

Freehold Township Engineering
7/26/06

Effective stormwater and water management is particularly important in Freehold Township with respect to maintaining water quality and supply for the Township and surrounding region. The Township is unique in that seven major river basins have their headwaters in the Township; a major aquifer recharge area for a substantial amount of Monmouth County and portions of Ocean County is located within the southern portion of the Township. In Addition, several streams leaving the Township serve surface drinking water supplies.

The Township is bisected by a ridge that runs southerly along NJSH Route 79, through the Borough of Freehold, then southwest along Monmouth County Route 537. This ridge divides two major river basins, the Raritan River Basin which flows off to the west and the Atlantic Ocean-Barnegat Bay Drainage Basin. (See Figure 2)

Starting in the extreme southwesterly corner, the Toms River has it's origins with a small tributary area that drains into Jackson Township, Ocean County. The Toms River's HUC-14 reference number is 02040301060010 and it lies in the Barnegat Bay Watershed.

Moving clockwise the Manalapan Brook has a small Tributary area west of Route 537 and south of the Route 33 Bypass which continues on into Manalapan Township, Monmouth County. Its HUC-14 reference number is 020300105140010 and it lies in the Raritan River Watershed.

The Matachaponix Brook has several tributaries in the Township North of the Route 33 bypass and west of Route 79 which include the Wemrock Brook, McGelliard's Brook, Spotswood Middle Brook, and the Topanemus Brook all which drain from the Northwestern corner of the Township into Manalapan Township.. The Wemrock Brook and the Spotswood Middle Brook's HUC -14 reference number is 02030105150010. The McGelliard's Brook and the Topanemus Brook's HUC -14 reference number is 02030105150020. The McGelliard's Brook, Spotswood Middle Brook, Wemrock Brook, and Wemrock Pond are classified as C-1 Streams within the boundaries of Monmouth Battlefield State Park. The Matachaponix Brook and its tributaries all eventually drain to the Raritan River.

Then continuing clockwise to the northeast corner of the Township is the Yellow Brook, which is tributary to the Swimming River and the Swimming River Reservoir. The Swimming River Reservoir is a drinking water supply located in Colts Neck and Holmdel Townships. The Yellow Brook's HUC – 14 reference number is 02030104070040 and it drains to the Swimming River which eventually discharges to the Atlantic Ocean.

Continuing on east of the Route 79- Route 537 corridor to the easterly township boundary we have the Manasquan River. The Manasquan River feeds a Reservoir which is located in Howell Township and is a drinking water supply. The Manasquan River is classified as C-1 water within the boundaries of Turkey Swamp Park. It has several tributaries including the Cattail Brook, Cricket Creek , Bannen Meadow Brook, and the Passaquangua Brook which has several of its own sub tributaries which

include Applegate's Creek, Burkes Creek and The Dubois Creek. The Passaquanqua Brook, the Cattail Brook, Cricket Creek, and Bannen Meadow Brook and associated tributaries HUC – 14 reference number is 0203010410020. The remainder of the Manasquan River drainage basin west of Georgia Road has HUC - 14 reference number 02030104100010

Continuing clockwise, we have the North and South branches of the Metedeconk River which they flow to the southeast from RT 537 into Jackson Township, Ocean County The North Branch of the Metedeconk has HUC – 14 reference number 020400301020010 and the South Branch of the Metedeconk River has HUC – 14 Reference Numbers 02040301030010, 02040301030020, and 02040301020020. Both the North and South Branches of the Metedeconk River are classified C-1for their entire length in Freehold Township since they feed drinking water supplies in Brick Township, Ocean County. (See figure 4) For the latest C-1 stream designations go to www.state.nj.us/dep/wmm/sgwqt/swqsdocs.html.

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 waterways that flow out of the Township to their associated major rivers have been monitored by the NJDEP and are ranked based on AMNET data. In addition to the AMNET data, the NJDEP and other regulatory agencies collect water quality chemical data on the streams in the state. These data show that the in stream total phosphorus concentrations and fecal coliform concentrations of Lake Topanemus, The Manasquan Tributaries, the Passaquangua Brook and McGelliards Brook, The North and South branches of the Metedeconk River, The Toms River, the Wemrock Brook and the Yellow Brook 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. Additionally, the Passaquangua Brook and McGelliards Brook have been rated as severely impaired.

The NJDEP has recently adopted a Total Maximum Daily Load for phosphorus at Lake Topanemus and has approved but not adopted a TMDL for Fecal Coliform at Lake Topanemus. To View these reports in their entirety please go to: For the latest TMDL's for Lake Topanemus go to :
www.state.nj.us/dep/watershedmgt/DOCS/2005%20Raritan%20Lakes%20rev.pdf and
www.state.nj.us/dep/watershedmgt/DOCS/TMDL/june2006/Raritan%20FC.pdf .

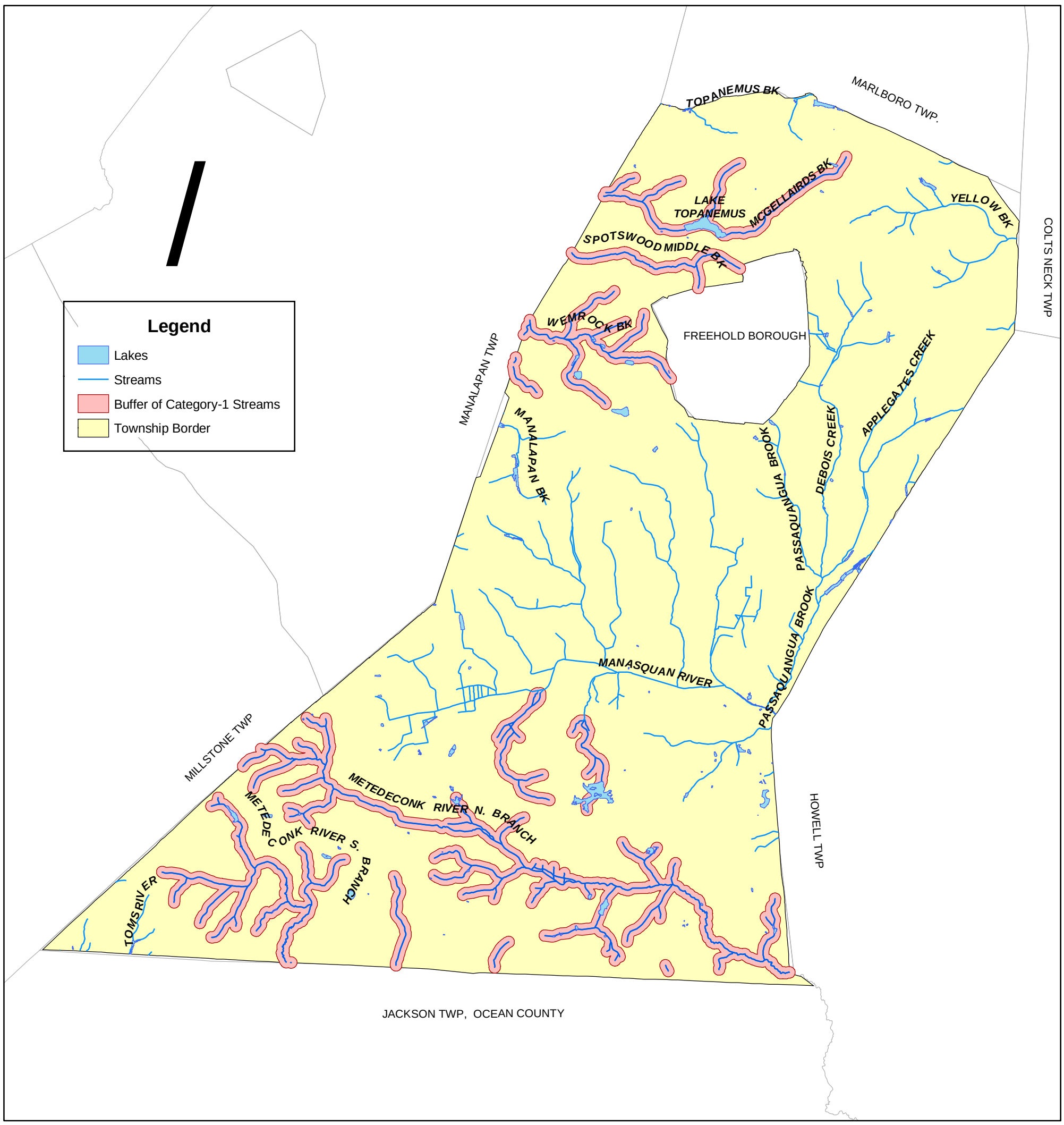

FIGURE-4

Category 1 Streams

FREEHOLD TOWNSHIP
Monmouth County, New Jersey

This map was developed using Freehold Township data.
Additional data includes NJDEP GIS data.

Freehold Township Engineering
7/26/06

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.

The integrated list is available from the NJDEP website at www.nj.gov/dep/wmm/sgwqt/wat/index.html. Specific data on biological monitoring (AMNET data) is available from the NJDEP web site at www.state.nj.us/dep/wmm/bfbm. Additional data can be found on the United States Geological Survey (USGS) site at www.water.usgs.gov.

A TMDL is the amount of a pollutant that can be accepted by a water body without causing an exceedance of water quality standards or interfering with the ability to use a water body 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. Specific TMDL's will be implemented for each watershed within the Township as they become available from the NJDEP.

As the imperviousness increased in the Township, the peak flow and volumes of stream flows also increased. The increased amount of water resulted in stream bank erosion, which resulted in unstable areas at roadway/bridge crossings, and degraded stream habitats. The high imperviousness of the Township has significantly decreased groundwater recharge, decreasing base flows in streams during dry weather periods. Lower base flows can have a negative impact on in stream habitat during the summer
months. Low base flows also have a negative impact on the downstream portions of the Metedeconk and Manasquan watersheds since these water supplies feed drinking water reservoirs. Groundwater recharge occurs throughout the Township with the more permeable soils spread throughout the southern sections. Groundwater recharge rates tend to decrease as you move northward corresponding with the clayey soil types encountered. Low impact stormwater management techniques will be applied throughout the Township with certain techniques being tailored for certain areas based on soil types. A map of groundwater recharge areas is shown in Figure 5.

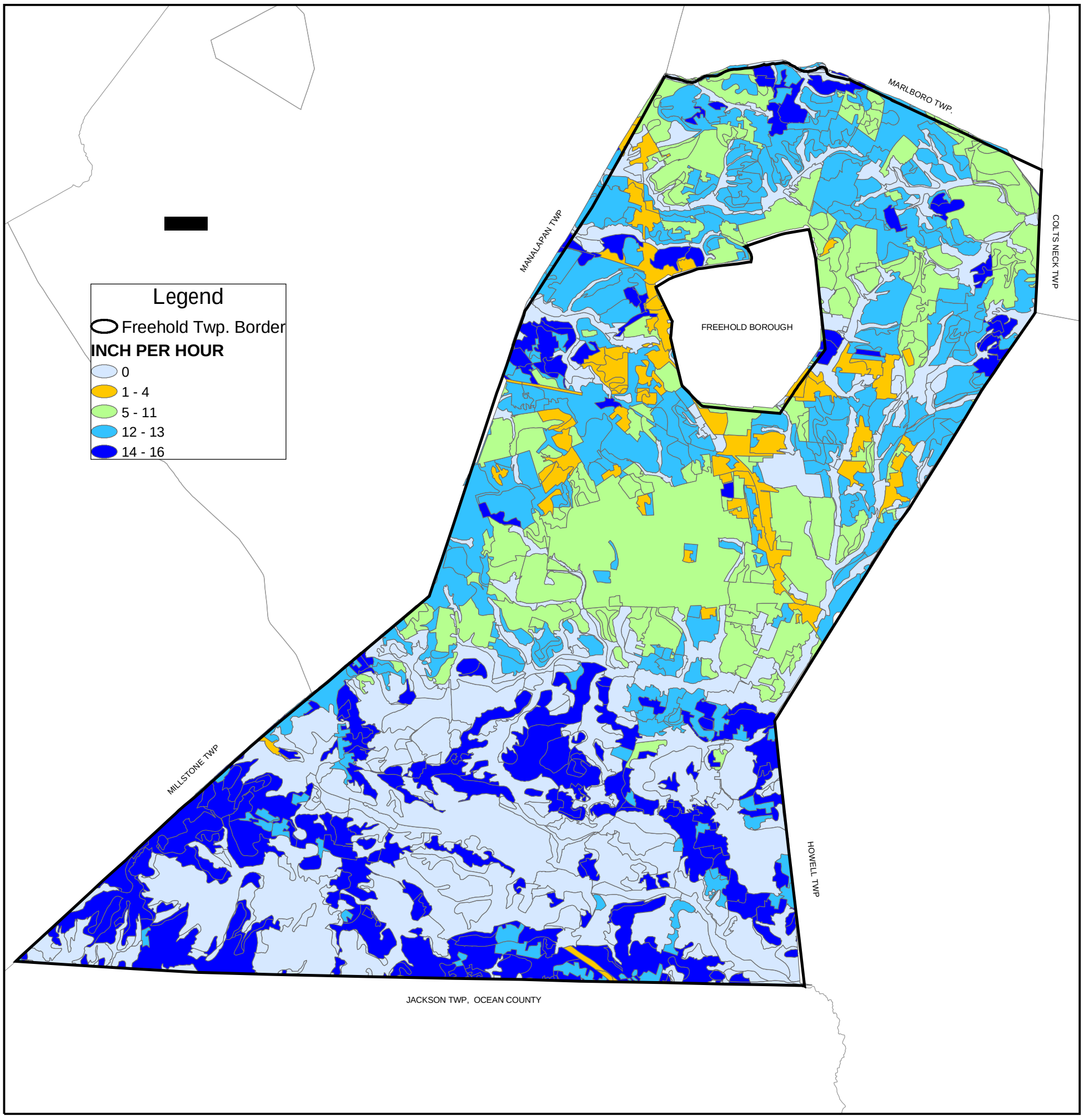

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FIGURE-5

GROUND WATER RECHARGE

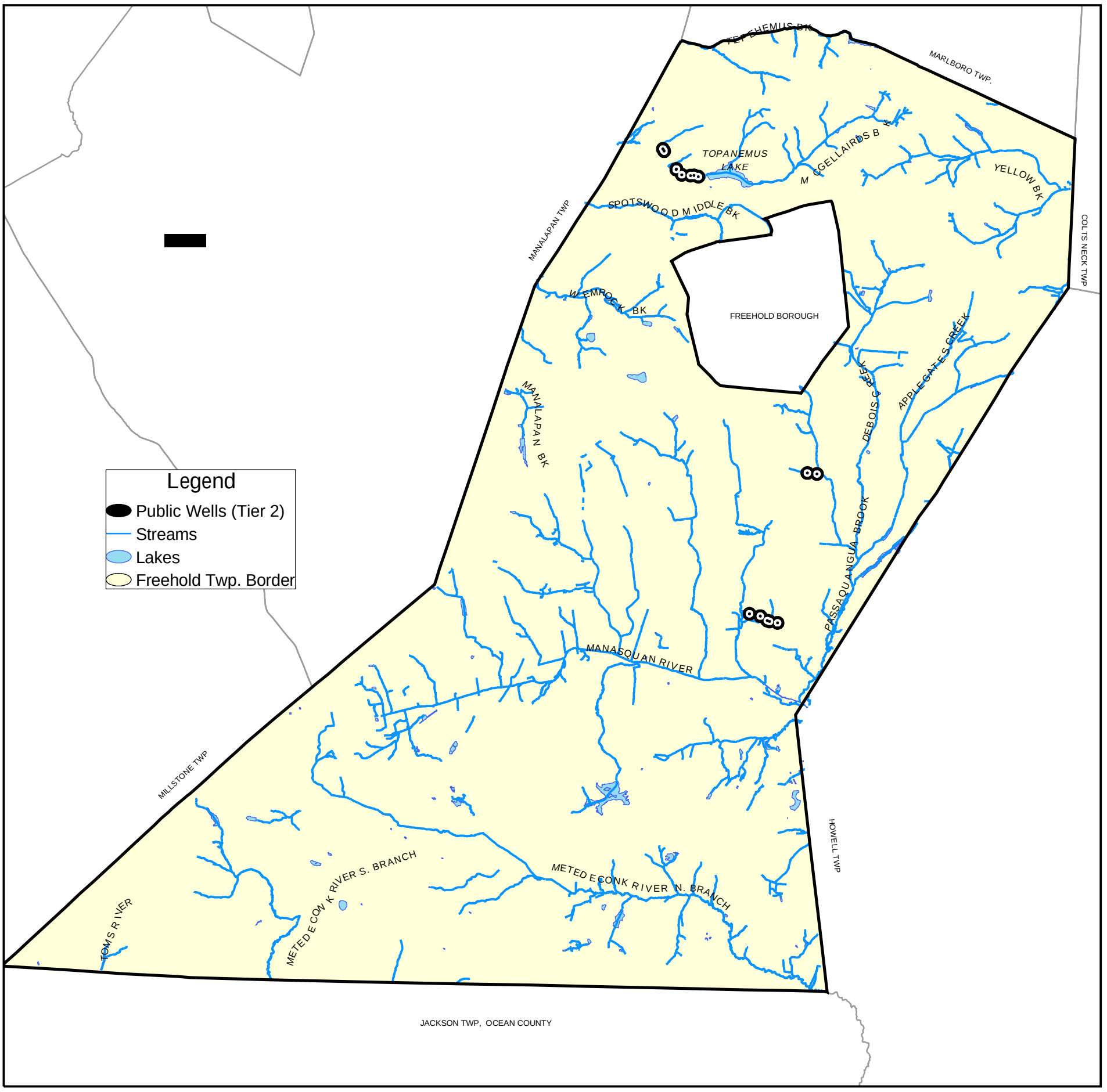
FREEHOLD TOWNSHIP

Monmouth County, New Jersey

This map was developed using Freehold Township data.
Additional data includes NJDEP GIS data.

Freehold Township Engineering
3/21/05

The Township has three potable water treatment plants and associated supply wells located as follows: Jackson Mills Road Water Treatment Plant which utilizes wells 9, 10, 11, 14, & 15. Koenig Lane Water Treatment Plant which utilizes wells 8 & 13, Point Ivy Water Treatment Plant which utilizes wells 3, 12, &7. Additional water treatment and well capacity information is restricted information due to its sensitivity. Based on conversations with staff at the NJGS it was determined that the Townships wells are all within confined aquifers and therefore do not require any well head protection zones other than a 50 foot radius safety zone. Well locations are shown in Figure 6.



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Additional data includes NJDEP GIS data.

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3/21/05

FIGURE-6

WELL LOCATIONS

FREEHOLD TOWNSHIP
Monmouth County, New Jersey

Design and Performance Standards

The Township has adopted the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 and the NJDEP Best Management Practices Manual in order 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 ordinance has been submitted to the county for review and was approved along with the Municipal Stormwater Management Plan by Resolution 06-24, Dated May 15, 2006. The NJDEP BMPM can be found at www.state.nj.us/dep/watershedmgt/DOCS/BMP_DOCS/bmpfeb2004pdfs/feb2004chap3.pdf

As indicated previously, the Township will tailor its stormwater management practices to specific criteria depending on critical areas such as drinking water supplies, groundwater recharge, certain obtainable Total Maximum Daily Loads (When they become available) and the streams current AMNET rating. More particularly, the Township will require all new applicants to utilize the Non Structural Point System rating (NSPS) spread sheet developed by the NJDEP Land Use Regulation Program (LURP) which is available at www.njstormwater.org/pdf/nsps_publicversion20060131.xls and awards points based on the types of Non Structural strategies incorporated into a project.

Additionally, The Township of Freehold is requiring applicants to the land use boards to utilize the groundwater recharge spread sheet to account for the loss of groundwater recharge due to development. This spread sheet was also developed by the Land Use Regulation Program and can be found at http://www.state.nj.us/dep/stormwater/highway/pdf/april2004public_excel2002njgrs_v2_0.xls

Plan Consistency

The Township has responded to the Manasquan River Watershed Association (MWRA) request to help protect the Manasquan River and it's surrounding watershed by passing resolution No: R-04-58 entitled: Resolution supporting the designation of the Manasquan River and it's surrounding watershed as a category one water. However, the NJDEP has yet to respond and legislatively adopt the designation for all of the Manasquan River.

The Township has also responded to the Brick Township Municipal Utilities Authority (BTMUA) request to be notified whenever a land use application in the Metedeconk River watershed is submitted to the Planning Board by passing resolution No. R-04-189 entitled: Resolution supporting Metedeconk River watershed planning efforts.

The Township has also been notified that a new RSWMP group is being put together for the Navesink-Swimming River watershed which the Township will endorse as it has in the past with other Watershed Associations.

The Township is not within a **Formal** Regional Stormwater Management Planning Area as outlined at NJAC 7:8-3 although; as these watershed associations develop a formal planning committee the township will participate in the ongoing planning effort.

Currently, there are only two TMDLs that have been developed for waters within the Township; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) and currently only needs to address the two TMDLs for Lake Topanemus. As RSWMPs and 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 State Development and Redevelopment Plan and the Monmouth County Growth Management Guide as follows:

The Township requires all Residential development applications to comply with the most recent Residential Site Improvement Standards (RSIS). The standards currently require all residential development to comply with the Phase II Stormwater regulations. 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 be updated to be consistent with any future updates to the RSIS.

The current Township Master Plan and this Plan have been developed based on the State Development and Redevelopment Plan and follows its guidelines.

- Encourage development, redevelopment and economic growth in locations that are well situated with respect to present or anticipated public services or facilities and to discourage development where it may impair or destroy natural resources or environmental qualities.

- Reduce sprawl

- Promote development and redevelopment in a manner consistent with sound planning and where infrastructure can be provided at private expense or with reasonable expenditures of public funds. (N.J.S.A. 52:18A-196, et seq.)

More on the state plan can be found at www.nj.gov/dca/osg/plan/stateplan.shtml .

The current Township Master Plan and this Plan have been developed based on the Monmouth County Growth Management Guide and follows its guidelines.

- Designates Freehold Borough and the surrounding Township as "Urban Center" while a "Suburban Settlement" belt is designated from Manalapan through Freehold to Howell Township along the Route 9 Corridor.

- Designates "Office Research/ Light Industrial Areas" for Bell Labs and NJ Bell Telephone sites. An industrial Area has been designated for them Township M-1 and M-2 Industrial areas east of the Borough.

- Designates Southern and Northwestern areas of the Township Agricultural Conservation.

- Designates Major State, County and municipally owned Conservation, park and open space areas as Existing Protection Areas.

More on the Monmouth County Guide go to:
www.co.monmouth.nj.us/03230planboard/LongRangeReports/GMGReport.PDF

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

Stormwater Management Strategies

The Township has reviewed the master plan and ordinances, and has provided a list of the sections in the Township land use and zoning ordinances that are to be modified to incorporate nonstructural stormwater management strategies and Low Impact Designs (LID's). These are the ordinances identified for revision. Once the ordinance texts are completed, they will be adopted and submitted to the County and a copy will be sent to the Department of Environmental Protection.

Chapter XVIII of the Township Code, entitled **LAND USE**, was reviewed with regard to incorporating nonstructural stormwater management strategies. Several changes were made to Article VI of this Chapter, entitled “Subdivision and Site Plan Procedures” to incorporate these strategies.

Section 18-35.20(c)(4): Off-site and Off-tract Improvements describes essential off-site and off-tract improvements. Language was added to this section to require that any off-site and off-tract Stormwater management and drainage improvements must conform to the “Design Standards” described in this plan and provided in **Chapter XVIII** of the Township Code.

Section 18-35.20(e): *Regional Stormwater Detention Option:* Off-site and Off-tract Improvements describes how developers may request a waiver of providing onsite Stormwater management and contribute to a regional plan. This section is being modified to include mitigation and contributions toward the development of a regional plan.

Section 18-35.21(h)(8)(k): *Conservation Easements:* This section requires a buffer of a 25 feet from the top of bank on all streams in the Township. This section is being revised to reflect the 150' non C-1 buffer and 300' C-1 buffer requirements.

Section 18-35.21(h)(9): *Width of Pavement:* This section requires roads of a certain type and width be constructed on all projects. This section is being revised to be in conformance with the current Residential Site Improvement Standards with regards to street hierarchy.

Section 18-35.21(h)(11)(i): *Curbs and Sidewalks:* This section requires that curb and sidewalk be installed on every road constructed. This section is being revised to be incompliance with the Residential Site Improvement Standards and to allow for curb cuts near landscape islands and for water quality swales and to allow for sidewalks to be constructed that do not sheet flow runoff to the street but allow runoff to flow to swales where applicable.

Section 18-35.21(h)(11)(n)(3): *Stormwater Management:* This section will be deleted in it's entirety and replaced with a new Stormwater Ordinance similar to the one outlined in the current NJDEP Best Management Practices Manual and in accordance with NJAC 7:8-5.

Section 18-35.21(h)(11)(p): *Driveways:* This section indicates that driveways in rural areas must be a minimum of 20 long from edge of pavement. It is proposed to relax this requirement to allow driveways to be constructed out of a more pervious material.

Section 18-35.22(b): *Streets, Sidewalks, Private Drives:* Section 5,8,13,16,18 and 20 shall be revised to coincide with the RSIS. This section will also be revised to allow for roadways without curb and sidewalk and limited frontage flag shaped lots on smaller subdivisions or cluster type lot configurations.

Section 18-39.1: *Off-Street Parking Requirements.* Off-street Parking details off-street parking requirements. This section will be amended to allow for curbing with curb cuts to encourage developers to allow for the discharge of impervious areas into landscaped areas for stormwater management. Also, language will be added to allow for use of natural vegetated swales, in areas where soil conditions will permit, for the water quality design storm, with overflow for larger storm events into storm sewers. This section also provides guidance on minimum parking space requirements. These requirements are based on the number of dwelling units and/or gross floor area. The section will allow a developer to demonstrate that fewer spaces will be required, provided area is set aside for additional spaces if necessary. This section will be amended to allow pervious paving to be used in areas to provide overflow parking, vertical parking structures, smaller parking stalls, and shared parking.

Section 18-40.2: *Landscaping and Buffer Regulations.* Buffers requires buffer areas along all lot and street lines separating residential uses from arterial and collector streets, separating a nonresidential use from either a residential use or residential zoning district line, and along all street lines where loading and storage areas can be seen from the street. The landscape requirements for these buffer areas in the existing section do not recommend the use of native vegetation. The language of this section was amended to require the use of native vegetation, which requires less fertilization and watering than non-native species.

Additionally, language was included to allow buffer areas to be used for stormwater management by disconnecting impervious surfaces and treating runoff from these impervious surfaces. This section currently requires the preservation of naturally wooded tracts and limits land disturbance for new construction.

Section 18-42.10: *Cluster Development* Cluster Development provides for a cluster development option to preserve land for public and agricultural purposes, to prevent development on environmentally sensitive areas, and to aid in reducing the cost of providing streets, utilities and services in residential developments. This cluster option is an excellent tool for reducing impervious roads and driveways. The option allows for smaller lots with smaller front and side yard setbacks than traditional development options in the ***R-E and RR Residential Zoning Districts only*** It also minimizes the disturbance of large tracts of land, which is a key nonstructural stormwater management strategy. The cluster option currently requires that 40% of the total tract be preserved as common open space. The cluster option will be revised to require that 25 percent of the green or common area be landscaped with trees and/or shrubs. This language will be amended to promote the use of native vegetation, which requires less fertilization and watering than non-native ornamental plants. Although the cluster option requires public concrete sidewalks to be installed along all streets, the option will also allow paths in open space to be mulched or stone to decrease the impervious area.

Chapter XXII Water Resources Protection: Water resources protection addresses the construction of septic systems within the township on properties which meet any of the five standards as listed below:

a. Standard number 1: any site with a seasonal high water table of 5 feet or less.

b. Standard number 2: any site with a percolation rate of less than 5 minutes.

c. Standard number 3: any site which could alter the hydrologic balance such as depletion of the ground water and recharge areas.

d. Standard number 4: any site that has the presence of habitat for threatened or endangered species.

e. Standard number 5: any site or portions thereof that are within 300 feet of a fresh water wetland.

This ordinance also establishes a 300' buffer between the septic system and any freshwater wetland.

Chapter XXIII Flood Plains and Watercourses: Flood plains and Watercourses establishes prohibited activities in all flood plains within the township. These activities are as follows:

a. No dumping of solid wastes within a stream corridor.

b. No dumping of pesticides, herbicides, domestic or industrial wastes, chemicals, hazardous wastes, radioactive wastes, and petroleum products.

This ordinance also requires that property owners must delineate all undelineated streams prior to conducting any regulated activities. Regulated activities are those activities which would require a permit from the NJDEP and/or Freehold Township.

Chapter XIXA Land Disturbance: Soil Erosion and Sedimentation Control Soil Erosion and Sediment Control addresses soil erosion and sediment control by referencing Chapter 128, the Township's Soil Erosion and Sediment Control Ordinance. This ordinance requires developers to comply with the New Jersey Soil Erosion and Sediment Control Standards and outlines some general design principles, including: whenever possible, retain and protect natural vegetation; minimize and retain water runoff to facilitate groundwater recharge; and, install diversions, sediment basins, and similar required structures prior to any on-site grading or disturbance.

Several changes are being made to Article VII the Township Ordinance entitled "Zoning." The Township has 12 types of residential districts. (see figure 9 Zoning) Each district has a maximum percent impervious surface allocation, ranging from 5 percent for the R-E Residential Zone, which has a minimum lot size of ten acres for detached single-family homes, to 35 percent for the R-9 Residential Zone Districts, which have a minimum lot size of 9,000 square feet. Additionally, the town has 4 high density multifamily residential districts. The maximum impervious coverages for these districts range from 40% to 50% The Township has 24 types of non-residential districts. Each of these districts has a maximum percent impervious surface allocation, ranging from 15 percent for the HC District to 65 percent for the B-2 District. Although each zone has a maximum allowable percent impervious surface, the Township Ordinance will be amended to remind developers that satisfying the percent impervious requirements does not relieve them of responsibility for complying with the Design and Performance Standards for Stormwater Management Measures to be contained in the new ordinance. The Township is evaluating the maximum allowable impervious cover for each zone to determine whether a reduction in impervious cover is appropriate.

The Township is also evaluating a maximum percent of disturbance for each zone, for those areas identified as natural features. Also, if a developer is given a variance to exceed the maximum allowable percent imperviousness, the developer must mitigate the impact of the additional impervious surfaces. This mitigation effort must address water quality, flooding, and groundwater recharge. A detailed description of how to develop a mitigation plan is included in this Municipal Stormwater Management Plan.

To review the township ordinance go to: www.twp.freehold.nj.us/ and click on Municipal Codebook at the bottom of the page.

Land Use/Build-Out Analysis

A detailed land use analysis for the Township was conducted. Figure 7 illustrates the existing land use in the Township based on 1995/97 GIS information from NJDEP. Figure 8 illustrates the Hydrologic Unit Codes (HUC14s) within the Township. The Township zoning map is shown in Figure 9. Figure 10 illustrates the Wetlands and Water Uses within the Township. Figure 11 identifies Public and Quasi Public Lands throughout Freehold Township. The build-out calculations for impervious cover are shown in Table 1. As expected when developing agricultural and forest lands, the build-out of these two HUC14s will result in a significant increase in impervious surfaces.

Table 2 presents the pollutant loading coefficients by land cover. The pollutant loads at full build-out are presented in Table 3.

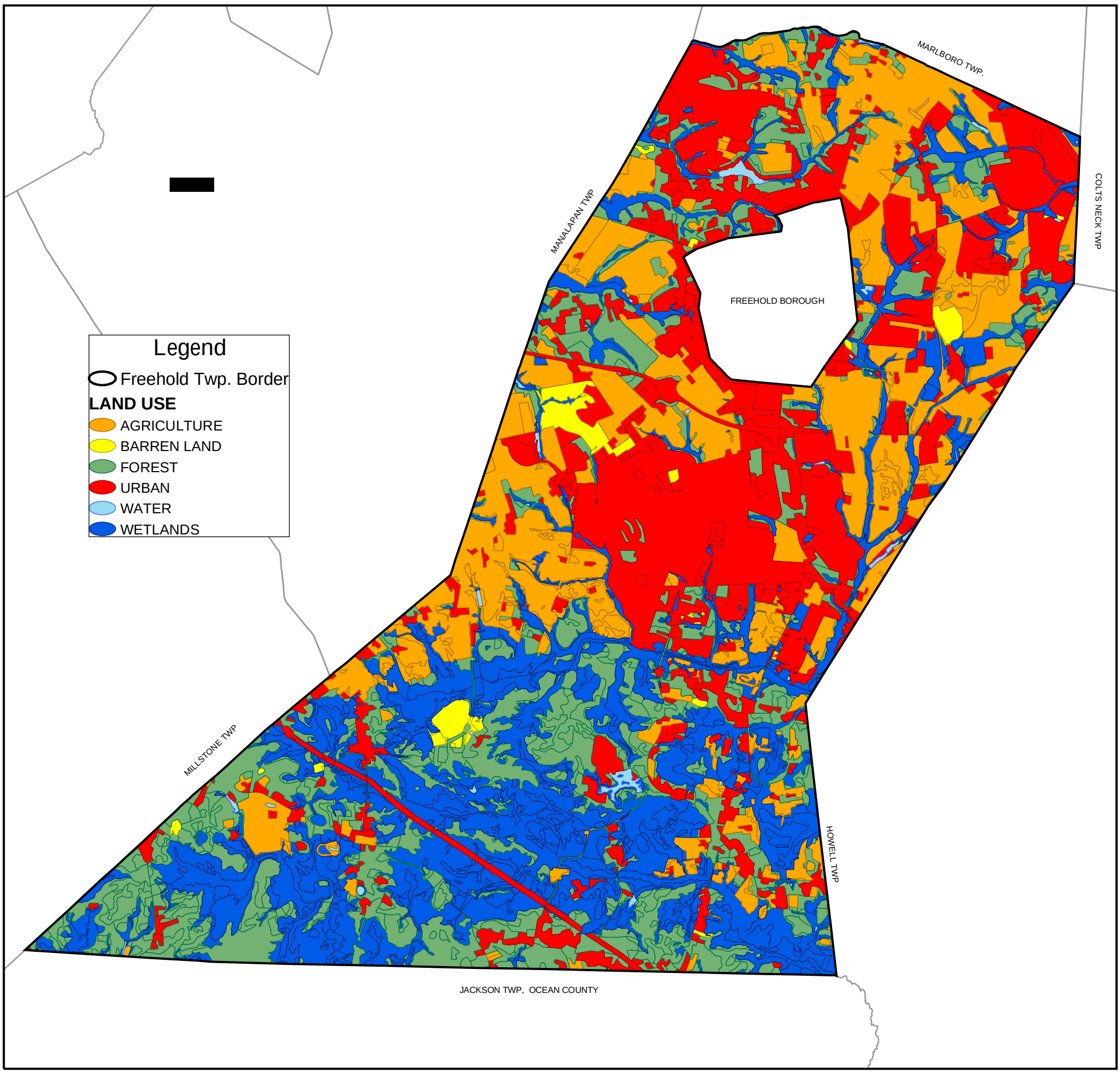


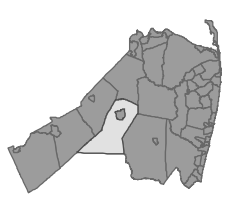
FIGURE-7

LAND USE LAND COVER

FREEHOLD TOWNSHIP
Monmouth County, New Jersey

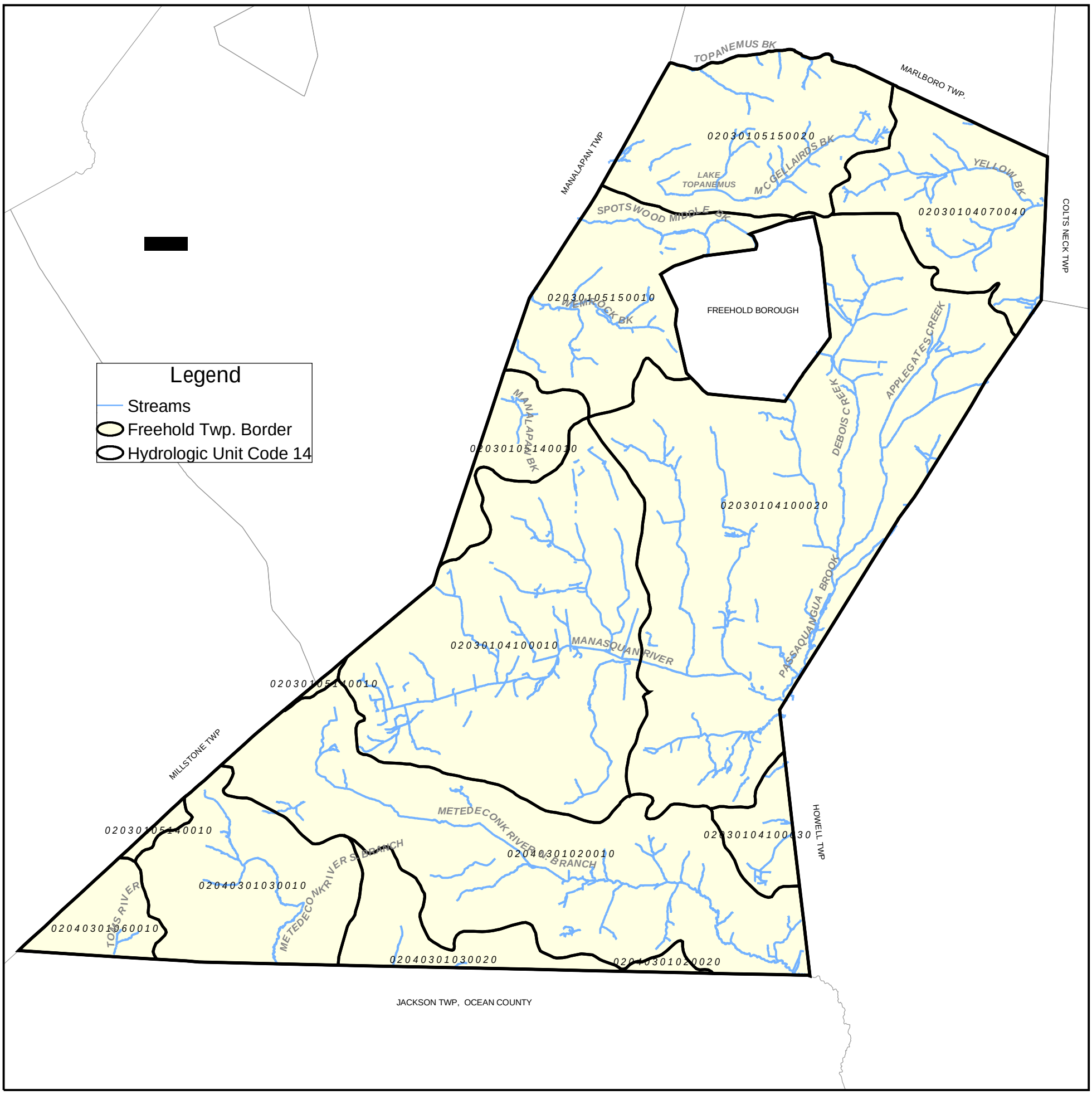
0 0.5 1 2 3 4 Miles

1:64,000



This map was developed using Freehold Township data.
Additional data includes NJDEP GIS data.

Freehold Township Engineering
3/21/05



0 0.5 1 2 3 4 Miles

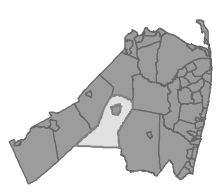
1:64,000

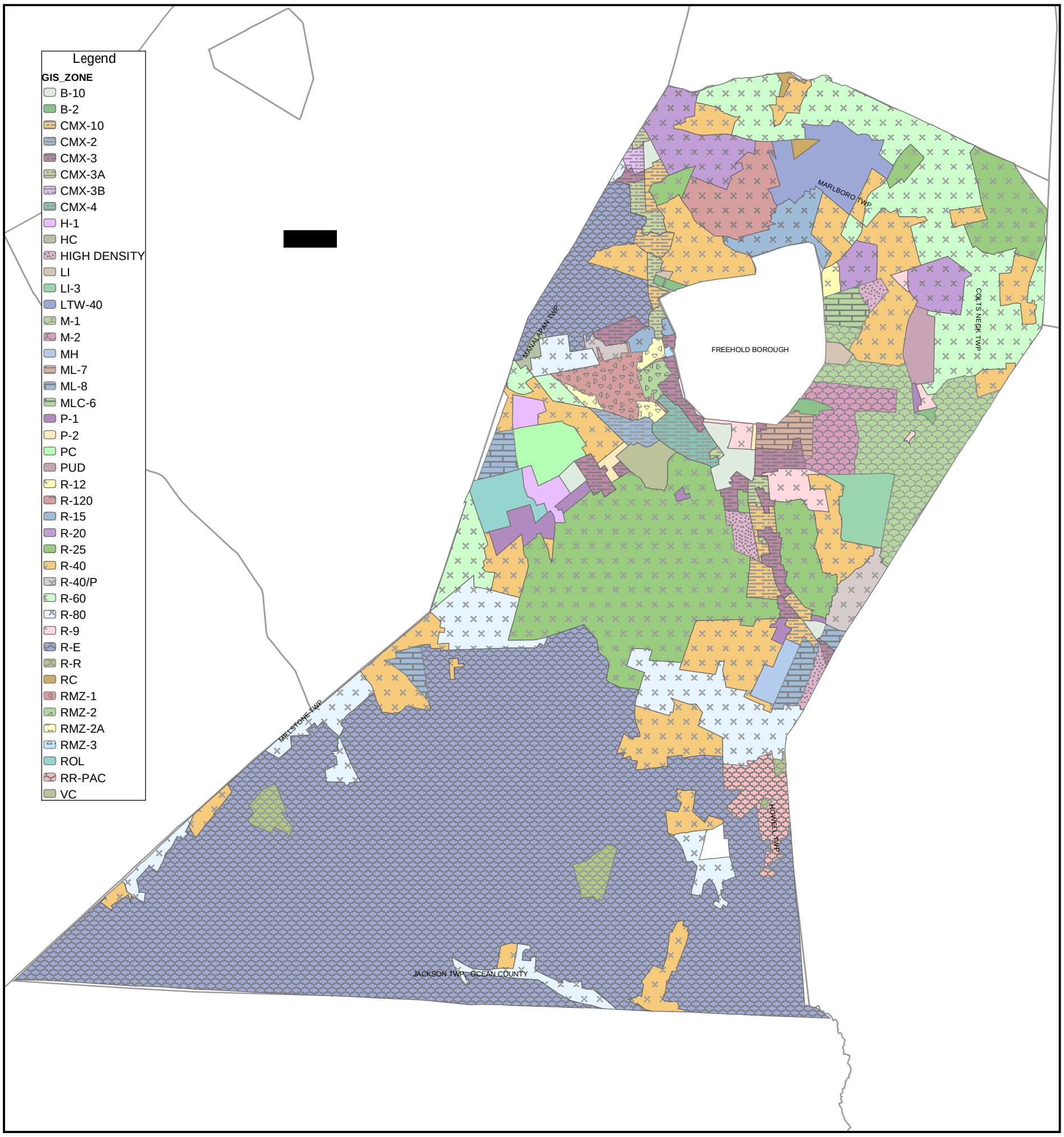
This map was developed using Freehold Township data.
Additional data includes NJDEP GIS data.

Freehold Township Engineering
3/21/05

FIGURE-8
HYDROLOGIC UNIT CODES

FREEHOLD TOWNSHIP
Monmouth County, New Jersey





0 0.5 1 2 3 4 Miles

1:64,000

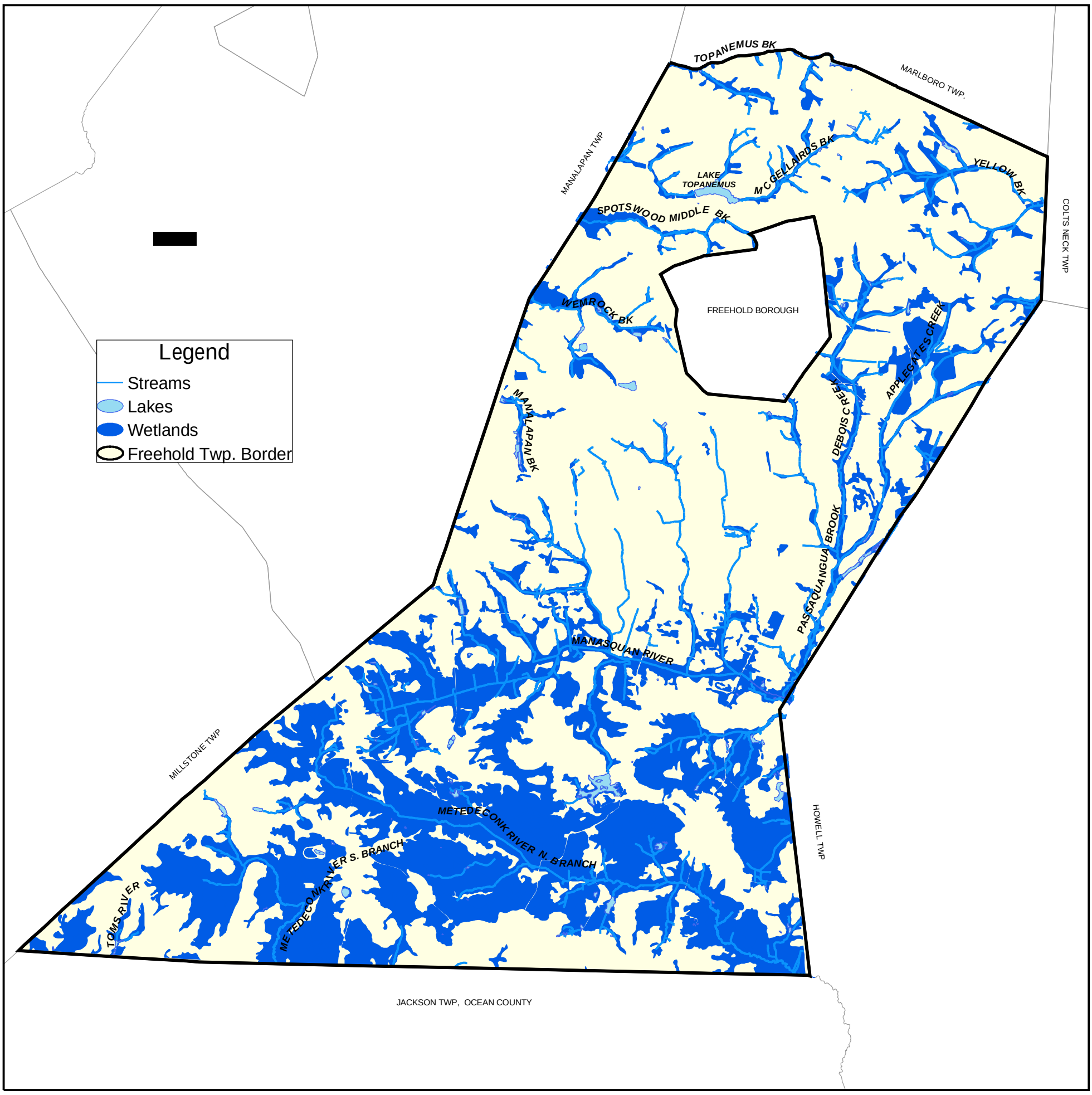
FIGURE-9

ZONING

FREEHOLD TOWNSHIP
Monmouth County, New Jersey

This map was developed using Freehold Township data.
Additional data includes NJDEP GIS data.

Freehold Township Engineering
3/21/05



0 0.5 1 2 3 4 Miles

1:64,000

This map was developed using Freehold Township data.
Additional data includes NJDEP GIS data.

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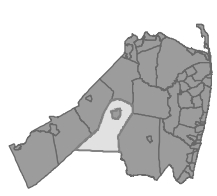
3/21/05

FIGURE-10

WETLANDS AND WATER LAND USES

FREEHOLD TOWNSHIP
Monmouth County, New Jersey



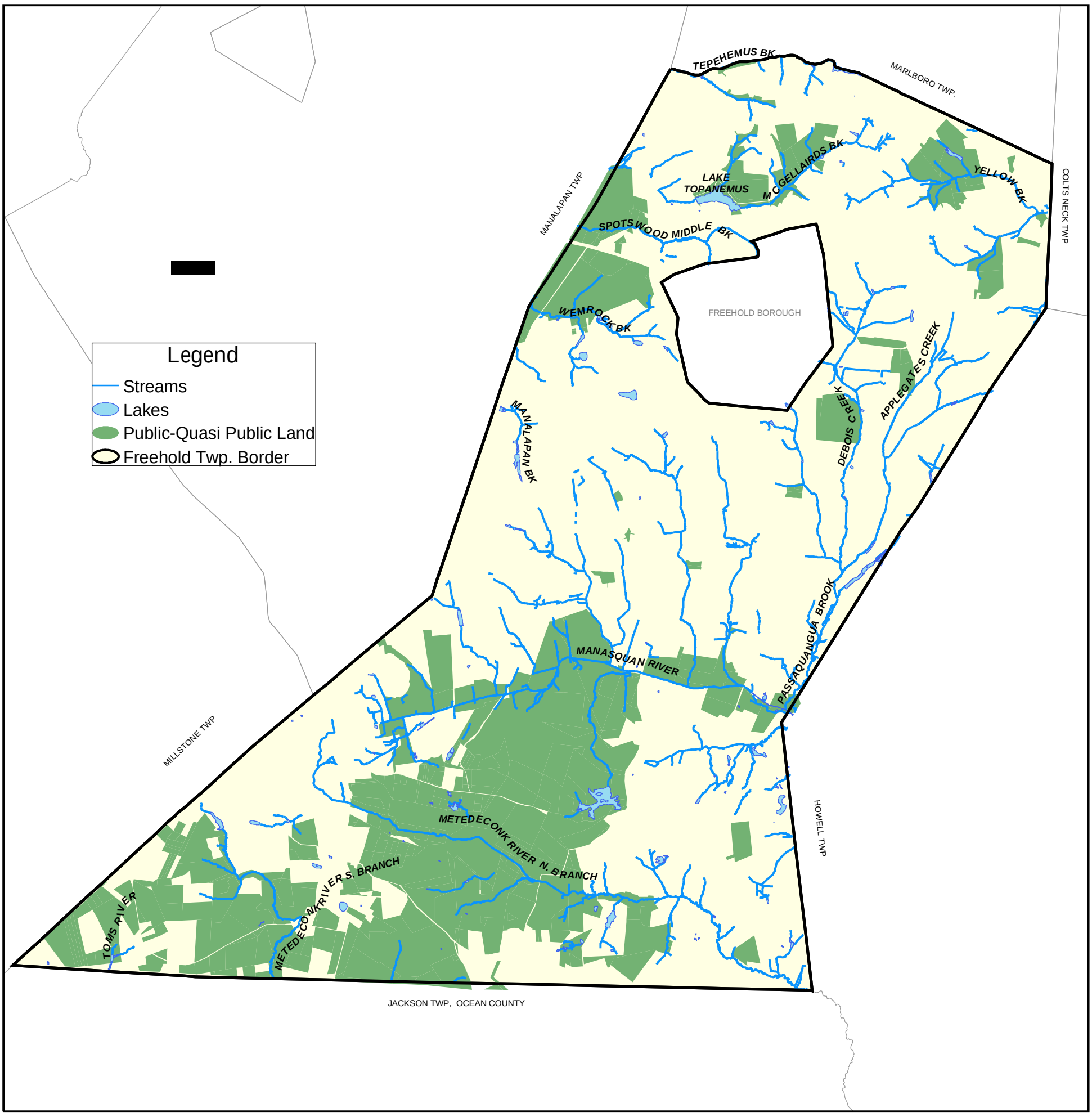


FIGURE-11

PUBLIC - QUASI PUBLIC LAND

(Cannot be deleloped: Parks, Farmland Pres., etc)

FREEHOLD TOWNSHIP
Monmouth County, New Jersey

This map was developed using Freehold Township data.
Additional data includes NJDEP GIS data.

Freehold Township Engineering
3/21/05

Table 1 - Build-Out Caluclations for HUC14s

HUC 14 & Zone	Total Area (Acres)	Existing Impervious (%)	Existing Impervious (Acres)	Wetlands WaterArea (Acres)	Developable Area (Acres)	Allowable Impervious (%)	Build-Out Impervious (Acres)
2030104070040							
(LTW-40)	27.75	4.50%	1.25	0	0	0	0
(R-20)	117.18	17.63%	20.66	5.66	0	30%	0
(R-25)	371.33	14.59%	54.19	28.41	0.8	30%	0.24
(R-40)	263.73	11.52%	30.39	18.89	0	25%	0
(R-60)	838.49	6.78%	56.84	198.52	123	18%	22.14
TOTAL	1618.48	10.09%	163.33	251.48	123.8	18%	22.38
2030104100010							
(B-10)	46.18	39.82%	18.39	2.8	6.9	60%	4.14
(CMX-3)	45.9	30.31%	13.91	0	13	60%	7.8
(H-1)	25.07	42.92%	10.76	0.34	11.3	65%	7.345
(ML-8)	56.89	1.95%	1.11	32.89	0	40%	0
(P-1)	90.33	17.36%	15.68	8.41	48.6	50%	24.3
(P-2)	0.17	64.71%	0.11	0	0	50%	0
(PC)	12.33	33.90%	4.18	0	0	30%	0
(R-25)	915.01	15.58%	142.59	81.7	0	30%	0
(R-40)	322.04	11.44%	36.84	64.42	6.6	25%	1.65
(R-60)	46.36	11.78%	5.46	0	16.8	18%	3.024
(R-80)	327.73	3.28%	10.76	74.13	227.7	15%	34.155
(R-E)	2396.37	0.97%	23.15	1154.33	100.2	5%	5.01
(R-R)	0.19	63.16%	0.12	0.1	0	8%	0
(ROL)	64.64	4.13%	2.67	0.5	0	50%	0
TOTAL	4349.21	6.57%	285.73	1419.62	431.1	20%	87.424
2030104100020							
(B-10)	112.14	68.29%	76.58	0.32	0	60%	0

Table 1 - Build-Out Caluclations for HUC14s

HUC 14 & Zone	Total Area (Acres)	Existing Impervious (%)	Existing Impervious (Acres)	Wetlands WaterArea (Acres)	Developable Area (Acres)	Allowable Impervious (%)	Build-Out Impervious (Acres)
(B-2)	32.7	41.28%	13.5	0.18	0	65%	0
(CMX-10)	148.01	15.26%	22.59	5.53	80.7	60%	48.42
(CMX-2)	41.04	34.92%	14.33	0	0.5	60%	0.3
(CMX-3)	224.52	33.28%	74.72	14.61	24.5	60%	14.7
(CMX-3A)	31.55	46.40%	14.64	2.08	6.2	60%	3.72
(CMX-4)	122.74	14.09%	17.29	1.14	76.2	60%	45.72
HIGH DENSITY	120.23	28.10%	33.79	11.48	0	50%	0
(LI)	26.95	13.99%	3.77	3.49	0	65%	0
(LI-3)	192.66	17.68%	34.07	62.95	62.5	65%	40.625
(M-1)	838.28	19.13%	160.34	213.64	186.6	65%	121.29
(M-2)	277.5	9.98%	27.7	48.92	79	65%	51.35
(MH)	77.24	27.08%	20.92	2.86	0	0	0
(ML-7)	90.56	28.06%	25.41	10.73	0	40%	0
(ML-8)	102.32	26.69%	27.31	27.46	0	40%	0
(MLC-6)	80.55	21.23%	17.1	28.21	0	40%	0
(P-1)	40.26	16.77%	6.75	10.42	4.7	50%	2.35
(P-2)	29.42	42.76%	12.58	0.05	0	50%	0
(PUD)	111.96	26.03%	29.14	72.49	0	30%	0
(R-12)	28.37	24.04%	6.82	2.52	0	35%	0
(R-15)	18.56	16.59%	3.08	0	0	35%	0
(R-20)	113.21	18.07%	20.46	6.51	0	30%	0
(R-25)	1235.27	14.83%	183.17	59.32	0	30%	0
(R-40)	1164.45	11.57%	134.73	260.2	57.1	25%	14.275
(R-60)	246.05	7.72%	19	54.89	45.8	18%	8.244
(R-80)	480.57	0.63%	3.01	188.02	108.6	15%	16.29
(R-9)	159.66	21.83%	34.85	3.55	0	35%	0
(R-E)	366.67	2.26%	8.3	238.65	46.7	5%	2.335
(R-R)	11.92	1.26%	0.15	0.01	0	8%	0
(RMZ-1)	15	39.93%	5.99	1.3	0	65%	0

Table 1 - Build-Out Caluclations for HUC14s

HUC 14 & Zone	Total Area (Acres)	Existing Impervious (%)	Existing Impervious (Acres)	Wetlands WaterArea (Acres)	Developable Area (Acres)	Allowable Impervious (%)	Build-Out Impervious (Acres)
(RMZ-2)	8.84	59.39%	5.25	0	0	65%	0
(RMZ-2A)	23.44	67.79%	15.89	0	0	60%	0
(RR-PAC)	130.08	6.21%	8.08	76.75	0	8%	0
(VC)	98.38	0.67%	0.66	12.86	0	60%	0
TOTAL	6801.1	15.91%	1081.97	1421.14	779.1	47%	369.619
2030104100030							
(R-80)	32.36	0.00%	0	7.55	19.3	15%	2.895
(R-E)	263.08	1.05%	2.76	181.49	88.8	5%	4.44
(R-R)	3.3	3.03%	0.1	1.52	0	8%	0
(RR-PAC)	98.36	1.07%	1.05	54.48	0	8%	0
TOTAL	397.1	0.98%	3.91	245.04	108.1	7%	7.335
2030105140010							
(B-10)	2.78	76.62%	2.13	0	0	60%	0
(H-1)	80.71	26.45%	21.35	4.55	44.8	65%	29.12
(ML-8)	69.86	29.10%	20.33	3.28	0	40%	0
(P-1)	1.12	0.00%	0	0	1.1	50%	0.55
(PC)	161.39	35.28%	56.94	14.81	0	30%	0
(R-40)	49.11	12.32%	6.05	5.31	5.1	25%	1.275
(R-60)	119.34	5.28%	6.3	10.2	1.6	18%	0.288
(R-80)	61.94	5.39%	3.34	1.09	35.3	15%	5.295
(R-E)	17	0.00%	0	0	3.4	5%	0.17
(ROL)	84.54	12.18%	10.3	9.9	0	50%	0
TOTAL	647.79	19.56%	126.74	49.14	91.3	40%	36.698

Table 1 - Build-Out Caluclations for HUC14s

HUC 14 & Zone	Total Area (Acres)	Existing Impervious (%)	Existing Impervious (Acres)	Wetlands WaterArea (Acres)	Developable Area (Acres)	Allowable Impervious (%)	Build-Out Impervious (Acres)
2030105150010							
(B-2)	12.84	61.37%	7.88	0.35	0	65%	0
(CMX-10)	52.81	29.63%	15.65	6.56	16.8	60%	10.08
(CMX-2)	27.79	29.08%	8.08	0	1.4	60%	0.84
(CMX-3)	92.07	14.49%	13.34	7.32	0	60%	0
(CMX-3A)	46.26	45.22%	20.92	1.99	0	60%	0
(CMX-4)	3.96	54.29%	2.15	0	0	60%	0
(H-1)	11.41	10.96%	1.25	0.02	0	65%	0
(HC)	24.88	15.76%	3.92	0.37	0	60%	0
(LI)	5.92	4.73%	0.28	1.42	4.4	65%	2.86
(R-120)	0.8	0.00%	0	0	0	15%	0
(R-15)	78.62	13.89%	10.92	1.18	0	35%	0
(R-40)	352.26	9.54%	33.62	29.03	16	25%	4
(R-40/P)	32.57	7.74%	2.52	4.97	3.7	60%	2.22
(R-60)	69.66	4.32%	3.01	7.12	0	18%	0
(R-80)	95.94	4.82%	4.62	4.08	46.1	15%	6.915
(R-E)	524.78	1.98%	10.37	121.69	0	5%	0
(RMZ-1)	184.09	47.06%	86.64	35.75	0	65%	0
(RMZ-2)	35.45	62.82%	22.27	0.47	0	65%	0
(RMZ-2A)	45	8.69%	3.91	12.79	14.3	60%	8.58
(RMZ-3)	4.23	74.23%	3.14	0.98	0	65%	0
TOTAL	1701.34	14.96%	254.49	236.09	102.7	35%	35.495
2030105150020							
(B-10)	17.56	78.76%	13.83	0	0	60%	0
(CMX-10)	37.12	34.62%	12.85	10.08	1.8	60%	1.08
(CMX-3)	15.25	21.44%	3.27	4.8	3.5	60%	2.1

Table 1 - Build-Out Caluclations for HUC14s

HUC 14 & Zone	Total Area (Acres)	Existing Impervious (%)	Existing Impervious (Acres)	Wetlands WaterArea (Acres)	Developable Area (Acres)	Allowable Impervious (%)	Build-Out Impervious (Acres)
(CMX-3A)	58.58	52.44%	30.72	5.98	0	60%	0
(CMX-3B)	24.97	14.26%	3.56	5.75	0	60%	0
(LTW-40)	345.55	4.77%	16.47	33.62	0	0	0
(R-120)	310.51	4.45%	13.81	40.36	63.6	15%	9.54
(R-15)	114.51	15.89%	18.19	8.92	0	35%	0
(R-20)	308.53	15.47%	47.74	17.19	0	30%	0
(R-25)	50.14	14.36%	7.2	2.08	0	30%	0
(R-40)	236.14	9.33%	22.04	16.7	14.4	25%	3.6
(R-60)	453.81	7.74%	35.14	69.88	81.3	18%	14.634
(R-80)	8.89	0.00%	0	1.2	8.9	15%	1.335
(R-E)	62.81	1.97%	1.24	3.89	0	5%	0
(RC)	29.32	19.85%	5.82	3.05	0	15%	0
TOTAL	2073.69	11.18%	231.88	223.5	173.5	19%	32.289
2040301020010							
(R-40)	81.32	9.86%	8.02	17.73	3	25%	0.75
(R-80)	215.42	6.22%	13.39	18.18	72.1	15%	10.815
(R-E)	3766.69	1.14%	42.87	2452.14	390.4	5%	19.52
(R-R)	156.33	3.50%	5.47	64.01	0.1	8%	0.008
TOTAL	4219.76	1.65%	69.75	2552.06	465.6	7%	31.093
2040301020020							
(R-40)	44.19	5.93%	2.62	0.23	2.8	25%	0.7
(R-E)	73.07	0.83%	0.61	1.67	8.9	5%	0.445
TOTAL	117.26	2.75%	3.23	1.9	11.7	10%	1.145
2040301030010							

Table 1 - Build-Out Caluclations for HUC14s

HUC 14 & Zone	Total Area (Acres)	Existing Impervious (%)	Existing Impervious (Acres)	Wetlands WaterArea (Acres)	Developable Area (Acres)	Allowable Impervious (%)	Build-Out Impervious (Acres)
(R-40)	35.54	8.81%	3.13	0.92	0	25%	0
(R-80)	20.63	3.20%	0.66	2.29	8.9	15%	1.335
(R-E)	1649.42	1.02%	16.88	832.26	258.5	5%	12.925
TOTAL	1705.59	1.21%	20.67	835.47	267.4	5%	14.26
2040301030020							
(R-40)	11.8	17.97%	2.12	0	0	25%	0
(R-80)	92.33	6.51%	6.01	0.39	11.6	15%	1.74
(R-E)	696.11	0.92%	6.39	235.65	91.2	5%	4.56
TOTAL	800.24	1.81%	14.52	236.04	102.8	6%	6.3
2040301060010							
(R-40)	17.63	9.02%	1.59	1.63	0	25%	0
(R-80)	0.51	5.88%	0.03	0	0	15%	0
(R-E)	412.15	0.73%	3	115.61	88.7	5%	4.435
TOTAL	430.29	1.07%	4.62	117.24	88.7	5%	4.435

Table 2 - Pollutant Loads By Land Cover

Land Cover	TP **lbs/acre/yr**	TN **lbs/acre/yr**	TSS **lbs/acre/yr**
High, Medium Density Residential	**1.4**	**15**	**140**
Low Density, Rural Residential	**0.6**	**5**	**100**
Commercial	**2.1**	**22**	**200**
Industrial	**1.5**	**16**	**200**
Urban	**1**	**10**	**120**
Agriculture	**1.3**	**10**	**300**
Forest, Water, Wetlands	**0.1**	**3**	**40**
Barrenland/Transitional Area	**0.5**	**5**	**60**

(From NJDEP BMPM - Latest Edition - Table 3.1 Pollutant Loads by Land Cover)

Table 3 - Nonpoint Source Loads at Build-out

HUC 14 & Zone	Total Area (Acres)	TP (lbs/acre/yr)	TP (lbs/yr)	TN (lbs/acre/yr)	TN (lbs/yr)	TSS (lbs/acre/yr)	TSS (lbs/yr)
2030104070040							
(LTW-40)	27.75	0.6	16.65	5	138.75	100	2775
(R-20)	117.18	1.4	164.052	15	1757.7	140	16405.2
(R-25)	371.33	1.4	519.862	15	5569.95	140	51986.2
(R-40)	263.73	0.6	158.238	5	1318.65	100	26373
(R-60)	838.49	0.6	503.094	5	4192.45	100	83849
TOTAL	1618.48		1361.896		12977.5		181388.4
2030104100010							
(B-10)	46.18	2.1	96.978	22	1015.96	200	9236
(CMX-3)	45.9	2.1	96.39	22	1009.8	200	9180
(H-1)	25.07	2.1	52.647	22	551.54	200	5014
(ML-8)	56.89	1.4	79.646	15	853.35	140	7964.6
(P-1)	90.33	2.1	189.693	22	1987.26	200	18066
(P-2)	0.17	2.1	0.357	22	3.74	200	34
(PC)	12.33	1.4	17.262	15	184.95	140	1726.2
(R-25)	915.01	1.4	1281.014	15	13725.15	140	128101.4
(R-40)	322.04	0.6	193.224	5	1610.2	100	32204

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(R-60)	46.36	0.6	27.816	5	231.8	100	4636
(R-80)	327.73	0.6	196.638	5	1638.65	100	32773
(R-E)	2396.37	0.1	239.637	3	7189.11	40	95854.8
(R-R)	0.19	0.6	0.114	5	0.95	100	19
(ROL)	64.64	1.5	96.96	16	1034.24	200	12928
TOTAL	4349.21		2568.376		31036.7		357737
2030104100020							
(B-10)	112.14	2.1	235.494	22	2467.08	200	22428
(B-2)	32.7	2.1	68.67	22	719.4	200	6540
(CMX-10)	148.01	2.1	310.821	22	3256.22	200	29602
(CMX-2)	41.04	2.1	86.184	22	902.88	200	8208
(CMX-3)	224.52	2.1	471.492	22	4939.44	200	44904
(CMX-3A)	31.55	2.1	66.255	22	694.1	200	6310
(CMX-4)	122.74	2.1	257.754	22	2700.28	200	24548
HIGH DENSITY	120.23	1.4	168.322	15	1803.45	140	16832.2
(LI)	26.95	1.5	40.425	16	431.2	200	5390
(LI-3)	192.66	1.5	288.99	16	3082.56	200	38532
(M-1)	838.28	1.5	1257.42	16	13412.48	200	167656
(M-2)	277.5	15	4162.5	16	4440	200	55500
(MH)	77.24	1.4	108.136	15	1158.6	140	10813.6

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HUC 14 & Zone	Total Area (Acres)	TP (lbs/acre/yr)	TP (lbs/yr)	TN (lbs/acre/yr)	TN (lbs/yr)	TSS (lbs/acre/yr)	TSS (lbs/yr)
(ML-7)	90.56	1.4	126.784	15	1358.4	140	12678.4
(ML-8)	102.32	1.4	143.248	15	1534.8	140	14324.8
(MLC-6)	80.55	1.4	112.77	15	1208.25	140	11277
(P-1)	40.26	2.1	84.546	22	885.72	200	8052
(P-2)	29.42	2.1	61.782	22	647.24	200	5884
(PUD)	111.96	1.4	156.744	15	1679.4	140	15674.4
(R-12)	28.37	1.4	39.718	15	425.55	140	3971.8
(R-15)	18.56	1.4	25.984	15	278.4	140	2598.4
(R-20)	113.21	1.4	158.494	15	1698.15	140	15849.4
(R-25)	1235.27	1.4	1729.378	15	18529.05	140	172937.8
(R-40)	1164.45	0.6	698.67	5	5822.25	100	116445
(R-60)	246.05	0.6	147.63	5	1230.25	100	24605
(R-80)	480.57	0.6	288.342	5	2402.85	100	48057
(R-9)	159.66	0.6	95.796	15	2394.9	140	22352.4
(R-E)	366.67	0.1	36.667	3	1100.01	40	14666.8
(R-R)	11.92	0.6	7.152	5	59.6	100	1192
(RMZ-1)	15	2.1	31.5	22	330	200	3000
(RMZ-2)	8.84	2.1	18.564	22	194.48	200	1768
(RMZ-2A)	23.44	2.1	49.224	22	515.68	200	4688
(RR-PAC)	130.08	1.4	182.112	22	2861.76	140	18211.2
(VC)	98.38	2.1	206.598	22	2164.36	200	19676
TOTAL	6801.1		11924.166		87328.79		975173.2

Table 3 - Nonpoint Source Loads at Build-out

HUC 14 & Zone	Total Area (Acres)	TP (lbs/acre/yr)	TP (lbs/yr)	TN (lbs/acre/yr)	TN (lbs/yr)	TSS (lbs/acre/yr)	TSS (lbs/yr)
2030104100030							
(R-80)	32.36	0.6	19.416	5	161.8	100	3236
(R-E)	263.08	0.1	26.308	3	789.24	40	10523.2
(R-R)	3.3	0.6	1.98	5	16.5	100	330
(RR-PAC)	98.36	1.4	137.704	15	1475.4	140	13770.4
TOTAL	397.1		185.408		2442.94		27859.6
2030105140010							
(B-10)	2.78	2.1	5.838	22	61.16	200	556
(H-1)	80.71	2.1	169.491	22	1775.62	200	16142
(ML-8)	69.86	1.4	97.804	15	1047.9	140	9780.4
(P-1)	1.12	2.1	2.352	22	24.64	200	224
(PC)	161.39	1.4	225.946	15	2420.85	140	22594.6
(R-40)	49.11	0.6	29.466	5	245.55	100	4911
(R-60)	119.34	0.6	71.604	5	596.7	100	11934
(R-80)	61.94	0.6	37.164	5	309.7	100	6194
(R-E)	17	0.1	1.7	3	51	40	680
(ROL)	84.54	1.5	126.81	16	1352.64	200	16908
TOTAL	647.79		768.175		7885.76		89924

Table 3 - Nonpoint Source Loads at Build-out

HUC 14 & Zone	Total Area (Acres)	TP (lbs/acre/yr)	TP (lbs/yr)	TN (lbs/acre/yr)	TN (lbs/yr)	TSS (lbs/acre/yr)	TSS (lbs/yr)
20301051500l0							
(B-2)	12.84	2.1	26.964	22	282.48	200	2568
(CMX-10)	52.81	2.1	110.901	22	1161.82	200	10562
(CMX-2)	27.79	2.1	58.359	22	611.38	200	5558
(CMX-3)	92.07	2.1	193.347	22	2025.54	200	18414
(CMX-3A)	46.26	2.1	97.146	22	1017.72	200	9252
(CMX-4)	3.96	2.1	8.316	22	87.12	200	792
(H-1)	11.41	2.1	23.961	22	251.02	200	2282
(HC)	24.88	2.1	52.248	22	547.36	200	4976
(LI)	5.92	1.5	8.88	16	94.72	200	1184
(R-120)	0.8	0.6	0.48	5	4	100	80
(R-15)	78.62	1.4	110.068	15	1179.3	140	11006.8
(R-40)	352.26	0.6	211.356	5	1761.3	100	35226
(R-40/P)	32.57	0.6	19.542	5	162.85	100	3257
(R-60)	69.66	0.6	41.796	5	348.3	100	6966
(R-80)	95.94	0.6	57.564	5	479.7	100	9594
(R-E)	524.78	0.1	52.478	3	1574.34	40	20991.2
(RMZ-1)	184.09	2.1	386.589	22	4049.98	200	36818
(RMZ-2)	35.45	2.1	74.445	22	779.9	200	7090
(RMZ-2A)	45	2.1	94.5	22	990	200	9000

Table 3 - Nonpoint Source Loads at Build-out

HUC 14 & Zone	Total Area (Acres)	TP (lbs/acre/yr)	TP (lbs/yr)	TN (lbs/acre/yr)	TN (lbs/yr)	TSS (lbs/acre/yr)	TSS (lbs/yr)
(RMZ-3)	4.23	2.1	8.883	22	93.06	200	846
TOTAL	1701.34		1637.823		17501.89		196463
2030105150020							
(B-10)	17.56	2.1	36.876	22	386.32	200	3512
(CMX-10)	37.12	2.1	77.952	22	816.64	200	7424
(CMX-3)	15.25	2.1	32.025	22	335.5	200	3050
(CMX-3A)	58.58	2.1	123.018	22	1288.76	200	11716
(CMX-3B)	24.97	2.1	52.437	22	549.34	200	4994
(LTW-40)	345.55	0.6	207.33	5	1727.75	100	34555
(R-120)	310.51	0.6	186.306	5	1552.55	100	31051
(R-15)	114.51	1.4	160.314	15	1717.65	140	16031.4
(R-20)	308.53	1.4	431.942	15	4627.95	140	43194.2
(R-25)	50.14	1.4	70.196	15	752.1	140	7019.6
(R-40)	236.14	0.6	141.684	5	1180.7	100	23614
(R-60)	453.81	0.6	272.286	5	2269.05	100	45381
(R-80)	8.89	0.6	5.334	5	44.45	100	889
(R-E)	62.81	0.1	6.281	3	188.43	40	2512.4
(RC)	29.32	0.1	2.932	3	87.96	40	1172.8
TOTAL	2073.69		1806.913		17525.15		236116.4

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HUC 14 & Zone	Total Area (Acres)	TP (lbs/acre/yr)	TP (lbs/yr)	TN (lbs/acre/yr)	TN (lbs/yr)	TSS (lbs/acre/yr)	TSS (lbs/yr)
2040301020010							
(R-40)	81.32	0.6	48.792	5	406.6	100	8132
(R-80)	215.42	0.6	129.252	5	1077.1	100	21542
(R-E)	3766.69	0.1	376.669	3	11300.07	40	150667.6
(R-R)	156.33	0.6	93.798	5	781.65	100	15633
TOTAL	4219.76		648.511		13565.42		195974.6
2040301020020							
(R-40)	44.19	0.6	26.514	5	220.95	100	4419
(R-E)	73.07	0.1	7.307	3	219.21	40	2922.8
TOTAL	117.26		33.821		440.16		7341.8
2040301030010							
(R-40)	35.54	0.6	21.324	5	177.7	100	3554
(R-80)	20.63	0.6	12.378	5	103.15	100	2063
(R-E)	1649.42	0.1	164.942	3	4948.26	40	65976.8
TOTAL	1705.59		198.644		5229.11		71593.8
2040301030020							

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HUC 14 & Zone	Total Area (Acres)	TP (lbs/acre/yr)	TP (lbs/yr)	TN (lbs/acre/yr)	TN (lbs/yr)	TSS (lbs/acre/yr)	TSS (lbs/yr)
(R-40)	11.8	0.6	7.08	5	59	100	1180
(R-80)	92.33	0.6	55.398	5	461.65	100	9233
(R-E)	696.11	0.1	69.611	3	2088.33	40	27844.4
TOTAL	800.24		132.089		2608.98		38257.4
2040301060010							
(R-40)	17.63	0.6	10.578	5	88.15	100	1763
(R-80)	0.51	0.6	0.306	5	2.55	100	51
(R-E)	412.15	0.1	41.215	3	1236.45	40	16486
TOTAL	430.29		52.099		1327.15		18300

Mitigation Plans

Purpose

The Stormwater Management rules establish design and performance standards for management of stormwater that address water quality, water quantity and recharge. These standards must be met on the site of the proposed development and, to the maximum extent practicable, using nonstructural stormwater management strategies. The Township of Freehold recognizes that not all situations are the same and times will arise when the design of these performance standards may be impossible to meet on the particular site of a proposed project because of site constraints. Therefore, this mitigation plan is being provided for proposed development that is granted a variance or exemption from the stormwater management design and performance standards. This plan will identify the measures necessary to offset the deficit created with respect to the design and performance standard that would result from the granting of a variance or exemption at the site. The plan will also ensure that the mitigation is completed in the same drainage area and for the same performance standard for which the variance or exemption was granted.

Mitigation Project Criteria

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. In order to select an appropriate project in response to the waiver and/or exemption request, requires an assessment of the impact that will result from the requested deviation from full compliance with the standard within the drainage area affected by the proposed project.

The applicant can select from one or more of the items below to compensate for the deficit from the performance standards resulting from the proposed project.

1. Retrofitting of Inlets
2. Installation of waterquality enhancing devices
3. Stream bank stabilization
4. Vegetative enhancement
5. Fund studies throughout the Township to identify problem areas.

The Township will allow a developer to provide funding or partial funding for an environmental enhancement project that has been identified in the Municipal Stormwater Management Plan, or towards the development of either a mitigation project or 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.

The following is required for each waiver or exemption from the standards granted by The Township.

Impact from noncompliance.

Provide a table quantifying what would be required for the project to achieve the standards, the extent to which this value will be achieved on site and the extent to which the value must be mitigated off site.

Narrative and supporting information regarding the need for the waiver including:

The waiver cannot be due to a condition created by the applicant. If the applicant can comply with the Stormwater Management rules through a reduction in the scope of the project, the applicant has created the condition and a waiver **Cannot** be issued. Demonstrate that the need for the waiver is not created by the applicant.

Provide a discussion and supporting documentation of the site conditions peculiar to the subject property that prevent the construction of a stormwater management facility that would achieve full compliance with the design and performance standards. Site conditions may include soil type, the presence of karst geology, acid soils, a high groundwater table, unique conditions that would create an unsafe design, as well as conditions that may provide a detrimental impact to the public health, welfare, and safety.

Demonstration that by granting the requested waiver/exemption it would not result in an adverse impact that would not be compensated for by off site mitigation.

Sensitive Receptor:

Identify the sensitive receptor related to the performance standard from which a waiver is sought. Demonstrate that the mitigation site contributes to the same sensitive receptor.

Design of the Mitigation Project:

Provide the design details of the mitigation project. This includes, but is not limited to, drawings, calculations, and other information needed to evaluate the mitigation project.

Responsible Party:

List the party or parties responsible for the construction and the maintenance of of the mitigation project. Documentation must be provided to demonstrate that the responsible party is aware of, has authority to, and accepts the responsibility for construction and maintenance. Under no circumstances shall the responsible party be an individual single-family homeowner. Selection of a project location that is under municipal authority avoids the need to obtain authority from a third party for the construction and future maintenance of the project.

Maintenance:

Include a maintenance plan that addresses the maintenance criteria at N.J.A.C. 7:8-5.8. In Addition, if the maintenance responsibility is being transferred to the municipality or another entity, the entity responsible for the cost of the maintenance must be identified. The municipality may provide the option for the applicant to convey the mitigation project to the municipality, if the applicant provides for the cost of maintenance in perpetuity.

Permits:

Obtain any and all necessary local, State or other applicable permits for the mitigation measure or project. Permits must be obtained prior to the municipal approval of the project for which mitigation is being provided.

Construction:

Demonstrate that the construction of the mitigation project coincides with the construction of the proposed project. A certificate of occupancy or final approval by the municipality for the project requiring mitigation cannot be issued until the mitigation project or measure receives final approval. Any mitigation projects proposed by the municipality to offset the stormwater impacts of that municipality's own projects must be completed within six months of the completion of the municipal project, in order to remain in compliance with their NJPDES General Permit.

The Township of Freehold currently has the following projects that will be constructed in the near future.

- Continue to install new inlet heads with Type N Eco-Drain Heads.
- Vortechnics chambers installed in several developments in Freehold Township.
- Stream Bank Stabilization on tributary of the Dubois Creek off of Koenig Lane.
- Installation of a Vortechnics inlet on failed waterquality swale off of Langeveld Drive.