

**Borough of East Rutherford**  
**Stormwater Management Plan**

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### **Reference Material Obtained From NJDEP Website**

Listed Water Information Cycle 2002 for Hackensack River Area 5  
Listed Water Information Cycle 2002 for Passaic River Area 5  
Listed Water Information Cycle 2002 for Berry's Creek Area 5

## **Introduction**

The Stormwater Management Plan (MSWMP) for the Borough of East Rutherford documents the Borough's policies and measures to address stormwater-related impacts. This plan has been developed in response to post construction stormwater management requirements for new development and redevelopment contained in the Borough's Tier A Municipal Stormwater General Permit (Permit No. NJG0153176) as 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 base flow in receiving water bodies.

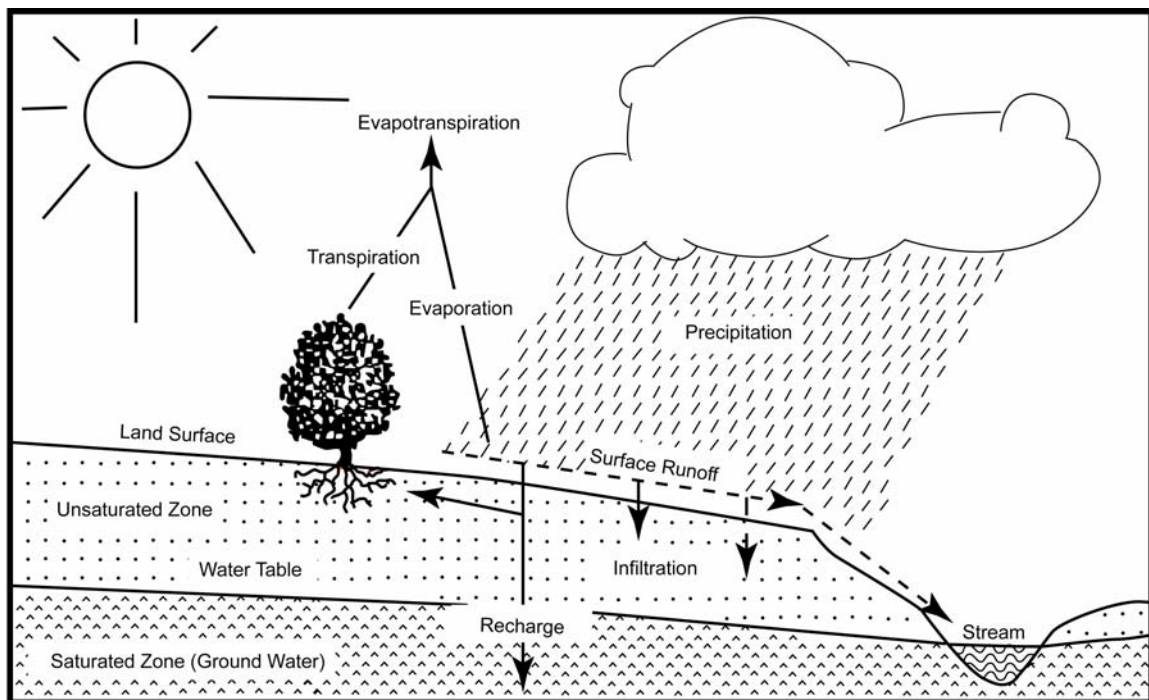
## **Stormwater Discussion**

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 downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration, which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can destroy habitat from which some species cannot adapt.

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

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

Figure C-1: Groundwater Recharge in the Hydrologic Cycle



Source: New Jersey Geological Survey Report GSR-32.

## **Background**

The Borough of East Rutherford encompasses 4.5 square mile area in the southeastern part of Bergen County, New Jersey. Bordering communities are Rutherford, Wallington, Wood Ridge, Lyndhurst and Carlstadt. The area east of the Hackensack River is not included in this report because it is managed and

The Borough is a fully developed urban community, however in recent years; the Borough has been under minor development pressure. The population of the Borough of East Rutherford has increased over a ten (10) year period from 7,902 in 1990, to 8,716 in 2000. This increased population growth was accommodated by redeveloping abandoned fully developed commercial property into housing developments, which created an increase in grass, tree and vegetation areas, which decreased stormwater runoff volumes and pollutant loads to the waterways of the municipality. Figure C-2 illustrates the waterways in the Borough of East Rutherford. Figure C-3 depicts the Borough of East Rutherford boundary on the USGS quadrangle maps.

There are no active wellheads within the Borough, however the borough is looking into its neighboring community's to see if there is a need to adopt a wellhead protection ordinance for the benefit of surrounding communities.

A search of the NJDEP website was conducted to obtain a list of Brownfield Sites within the Borough and none were found. The older site that were once there have now been developed into housing communities which resulted in a decrease in decrease of paved run-off areas and an increase in vegetation growth and natural drainage areas.

## **Achievement of NJDEP Stormwater Management Planning Goals**

In accordance with the Municipal Stormwater Management Plan requirements in Subchapter 4 of the Stormwater Management Rules, the Borough of East Rutherford's Stormwater Management Plan must demonstrate achievement of the general goals for stormwater management planning specified in Subchapter 2 of the Rules. The following summary has been prepared to demonstrate how the Plan achieves these goals.

### **1. GOAL: Reduce flood damage, including damage to life and property**

By requiring all major land developments to meet the stormwater quantity design and performance standards in Subchapter 5 of the Stormwater Management Rules, the Borough of East Rutherford's Municipal Stormwater Management Plan will reduce flood damage. In addition, the Plan will require mitigation measures for major developments that cannot strictly comply with the stormwater quantity design and performance standards in the 's Stormwater Control Ordinance or the Residential Site Improvement Standards. Retrofits to existing stormwater collection systems and stormwater quantity management measures mandated by the Mitigation Plan will also reduce existing flood damage.

### **2. GOAL: Minimize, to the extent practical, any increase in stormwater runoff from any new development**

By requiring the use of nonstructural stormwater management measures, the Borough of East Rutherford's Municipal Stormwater Management Plan will minimize the increase in stormwater runoff from new major land developments. Additionally, requiring compliance with the stormwater quantity standards described above will further decrease the potential for stormwater runoff increases from new land developments in the.

### **3. GOAL: Reduce soil erosion from any development or construction project**

The Borough of East Rutherford's Municipal Stormwater Management Plan requires that the *Soil Erosion and Sediment Control Standards in New Jersey* be followed for all major development projects. In addition, the Borough also presently requires compliance with these standards for all projects that disturb at least 5,000 square feet of land.

### **4. GOAL: Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures**

By requiring all major land developments to meet the stormwater quantity design and performance standards in Subchapter 5 of the Stormwater Management Rules either directly or through appropriate mitigation measures, the Borough of East Rutherford's Municipal Stormwater Management Plan will help assure the adequacy of existing and proposed culverts, bridges, and other in-stream structures.

### **5. GOAL: Maintain groundwater recharge**

By requiring all major land developments to meet the groundwater recharge design and performance standards in Subchapter 5 of the Stormwater Management Rules either directly or through appropriate mitigation measures analyses, the Borough East Rutherford's Municipal Stormwater Management Plan will help maintain groundwater recharge in the Borough.

**6. GOAL: Prevent, to the greatest extent feasible, an increase in NPS pollution**

By requiring all major land developments to meet the stormwater quality design and performance standards in Subchapter 5 of the Stormwater Management Rules either directly or through appropriate mitigation measures analyses, the Borough of East Rutherford's Municipal Stormwater Management Plan will help prevent an increase in NPS pollution in the Borough. These results will be enhanced through the maximum practical use of nonstructural stormwater management measures at such developments.

**7. GOAL: Maintain the integrity of stream channels for their biological functions, as well as for drainage**

By requiring all major land developments to meet the groundwater recharge and stormwater quality and quantity design and performance standards in Subchapter 5 of the Stormwater Management Rules either directly or through appropriate mitigation measures analyses, the East Rutherford's Municipal Stormwater Management Plan will help maintain the biological integrity of stream channels in the Borough. These results will be enhanced through the maximum practical use of nonstructural stormwater management measures at such developments.

**8. GOAL: Minimize pollutants in stormwater runoff from new and existing development in order to restore, enhance and maintain the chemical, physical, and biological integrity of the waters of the State, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water**

By requiring all major land developments to meet the groundwater recharge and stormwater quality and quantity design and performance standards in Subchapter 5 of the Stormwater Management Rules either directly or through appropriate mitigation measures analyses, the Borough of East Rutherford's Municipal Stormwater Management Plan will help achieve these multiple goals in waterways in the Borough. These results will be enhanced through the maximum practical use of nonstructural stormwater management measures at such developments.

**9. GOAL: Protect public safety through the proper design and operation of stormwater management basins**

By requiring the design of structural stormwater management facilities at major land developments to comply with the safety standards in Subchapter 6 of the Stormwater Management Rules, the East Rutherford Borough Municipal Stormwater Management Plan will protect the safety of inspection and maintenance personnel and members of the general public.

**Water Ways**

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.

There are two major rivers that border the Borough of East Rutherford. To the east is the Hackensack River and to the west is the Passaic River. The Hackensack River (ID: NJ\_0024) is a tidal waterway. Based on

the Dec. 31 2003 USEPA report for TMDL the portion of the Hackensack River in the vicinity of the Borough of East Rutherford is a High Priority and does not have a Targeted Flag. The Parent Impairments are metals caused by mercury, fish consumption advis. caused by chlordane and dioxin in fish tissue, dioxins caused by dioxins in fish tissue and PCBs. The Passaic River (ID: NJ-02030103010170) is a tidal waterway. Based on the Dec. 31 2002 USEPA report for TMDL the portion of the Passaic River in the vicinity of the Borough of East Rutherford is a Low Priority and has a Targeted Flag. The Parent Impairment is biological criteria.

The major tributary that flows through the Borough of East Rutherford to these major rivers is Berry's Creek (ID: NJ\_05-0002\_Berry's Creek). Berry's Creek is a high priority and does not have a targeted flag. The parent impairments are metal caused by arsenic, copper, lead and mercury and PCBs

A TMDL is a measurement of the amount of a pollutant that can be accepted by a water body without causing an exceedence 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 storm water and wastewater discharges, which require an NJPDES permit to discharge, and non-point source, which includes storm water 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. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.

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Insert Figure C-2

Waterways



Insert C - 3

Wellhead map

In addition to water quality problems, the Borough of East Rutherford has exhibited severe water quantity problems including flooding, stream bank erosion, and diminished base flow in its streams. Many of the culverts associated with road and railroad crossings in the Borough of East Rutherford are undersized. During severe storm events, these undersized culverts do not have adequate capacity, thereby causing a backwater effect and flooding upstream.

These culverts were designed for much different hydrologic conditions (i.e., less impervious area) than presently exist in the Borough of East Rutherford. As the imperviousness increased in the Borough of East Rutherford, the peak 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 Borough of East Rutherford 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. Wellhead protection areas, also required as part of the MSWMP, are shown in Figure C-5.

### **Description of Small Bodies of Water within the Borough of East Rutherford**

#### **Ditch 1: Du Bois Street**

Off of Du Bois Street there is a 20 feet wide drainage ditch that carries storm water off of Du Bois Street to Berry's Creek. The ditch divides Block 102, Lots 4 and 5 and runs along Conrail – Erie Lackawanna Railroad Property. This ditch is un-named, approximately 1,800 feet long and drains into Yearance Brook.

#### **Ditch 2: Yearance Brook**

Yearance Brook is a 30 feet wide x 2,625 feet long storm sewer easement that primarily runs along Conrail – Erie Lackawanna Railroad property. It borders Block 102, Lots 3 and 4, Block 106.01, Lots 6, 13, 14, 15, 16, and 17 where it drains into Berry's Creek.

#### **Ditch 3 & 4: Madison Circle Drive**

There are two (2) small un-named storm drainage ditches that drain off of Madison Circle Drive directly to Berry's Creek. The ditch on the north end of Madison Circle Drive is 20 feet wide x approximately 250 feet long and separates Block 106.02, Lot 5 from Lot 6. The second one is southwest of the one just described and is 15 feet wide x approximately 175 feet long and separates Block 106.02, Lot 9 from Lot 10.

#### **Ditches 5 & 6: Achermans Creek**

Achermans Creek and an un-named parallel ditch just north of Achermans Creek are the final two ditches discussed in this report. For simplicity we will address the un-named ditch as North Achermans Creek. Both Creeks are 30 feet wide x 1,500 feet long and drain directly into Berry's Creek. They originate at the Conrail – Erie Lackawanna Railroad Property cross under Murray Hill Parkway to Berry's Creek. Both Creeks run across Block 105.01, Lot 8 and Block 105.02, Lot 5.

Insert C 4

Wetlands and Water Land Use

## **Design and Performance Standards**

The Borough of East Rutherford 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 of a project the Borough of East Rutherford inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as per the approved design.

## **Exemption and Waiver Criteria**

The Borough exercises the right to reject any plans that do not comply with the performance standards presented in N.J.A.C. 7:8-5. The Borough shall not entertain variances presented to them for projects that can not meet the standards presented in N.J.A.C. 7:8-5 nor has the Borough adopted a mitigation plan to allow variances to be presented.

Finally, in accordance with Section 2.5 of Subchapter 2 of the Stormwater Management Rules, the Borough of East Rutherford has the ability to petition the NJDEP for an exemption from any of the design and performance standards presented in Subchapter 5 of the Rules provided that such exemption will not result in an increase in flood damage, water pollution, threats to biological integrity, or constitute a threat to public safety. The Borough may utilize this petition process if necessary during the development of its Stormwater Control Ordinance.

## **Plan Consistency**

The Borough of East Rutherford is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Borough of East Rutherford; therefore this plan does neither 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 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 Borough of East Rutherford'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 of East Rutherford 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**

The Borough of East Rutherford has reviewed the master plan and ordinances, and has provided a list of the sections in the Borough of East Rutherford land use and zoning ordinances that are to be modified to incorporate nonstructural stormwater management strategies. These are the ordinances identified for revision. Once the ordinance texts are completed, 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.

Chapter 327 of the Borough of East Rutherford Code, entitled Development Regulations, was reviewed with regard to incorporating nonstructural stormwater management strategies. Several changes were made to Article VI of this Chapter, entitled “Design and Performance Standards” to incorporate these strategies.

**Section 327-55:** 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 natural wood tracts and limits land disturbance for new construction.

**Section 327-60:** Curbs and Gutters requires that concrete curb and gutter, concrete curb, or Belgian block curb be installed along every street within and fronting on a development. This section was amended to allow for curb cuts or flush curbs with curb stops to allow vegetated swales to be used for stormwater conveyance and to allow the disconnection of impervious areas.

**Section 327-58:** Drainage, Watercourses and Flood Hazard Areas requires that all streets be provided with inlets and pipes where the same are necessary for proper drainage. This section was amended to encourage the use of natural vegetated swales in lieu of inlets and pipes.

**Section 327-44:** Driveways and Access ways describes the procedure for construction of any new driveway or access way to any street. This section was amended to allow the use of pervious paving materials to minimize stormwater runoff and promote groundwater recharge.

**Section 327-54:** Landscaping Plan requires that natural features, such as trees, brooks, swamps, hilltops, and views, be preserved whenever possible, and that care be taken to preserve selected trees to enhance soil stability and landscaped treatment of the area. This section was amended to expand trees to forested areas, to ensure that leaf litter and other beneficial aspects of the forest are maintained in addition to the trees.

**Land Use and Zoning Ordinances Article 10.12 of Zoning Book:** Nonconforming Uses, Structures or Lots requires a variance for existing single family homes proposing additions that exceed the maximum percent impervious. The homeowner must mitigate the impact of the additional impervious surfaces unless the Stormwater Management Plan for the development provided for these increases in impervious surfaces. A detailed description of how to develop a mitigation plan is present in the Borough of East Rutherford Code.

**Section 327-50:** Off-street Parking and Loading details off-street parking and loading requirements. All parking lots all are required to have concrete or Belgian block curbing around the perimeter of the parking and loading areas. This section also requires that concrete or Belgian block curbing be installed around all landscaped areas within the parking lot or loading areas. This section was amended to allow for flush curb with curb stop, or curbing with curb cuts to encourage developers to allow for the discharge of impervious areas into landscaped areas for stormwater management. Also, language was added to allow for use of natural vegetated swales 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 allows a developer to demonstrate that fewer spaces would be required, provided area is set aside for additional spaces if necessary. This section was amended to allow pervious paving to be used in areas to provide overflow parking, vertical parking structures, smaller parking stalls, and shared parking.

**Sections 327-66:** Performance Standards provide pollution source control. It prohibits materials or wastes to be deposited upon a lot in such form or manner that they can be transferred off the lot, directly or indirectly, by natural forces such as precipitation, evaporation or wind. It also requires that all materials and wastes that might create a pollutant or a hazard be enclosed in appropriate containers.

**Section 327-73:** Shade Trees requires a minimum of three shade trees per lot to be planted in the front yard. In addition to Section 327-73, the Borough of East Rutherford has a Tree Preservation Ordinance (Sections 327-160 to 327-165) that restricts and otherwise controls the removal of mature trees throughout the Borough of East Rutherford. This ordinance recognizes that the preservation of mature trees and forested areas is a key strategy in the management of environmental resources, particularly watershed management, air quality, and ambient heating and cooling. These sections set out a “critical footprint area” that extends 20 feet beyond the driveway and building footprint where clearing of trees cannot occur. This complies with minimizing land disturbance, which is a nonstructural stormwater management strategy. These sections were amended to require the identification of forested areas, and that *[insert percentage here]* of forested areas be protected from disturbance.

**Section 327-74:** Sidewalks describe sidewalk requirements for the Borough of East Rutherford. Although sidewalks are not required along all streets, the Borough of East Rutherford can require them in areas where the probable volume of pedestrian traffic, the development’s location in relation to other populated areas and high vehicular traffic, pedestrian access to bus stops, schools, parks, and other public places, and the general type of improvement intended indicate the advisability of providing a pedestrian way. Sidewalks are to be a minimum of four feet wide and constructed of concrete. Language was added to this section to require developers to design sidewalks to discharge stormwater to neighboring lawns where feasible to disconnect these impervious surfaces, or use permeable paving materials where appropriate.

**Section 327-34:** Soil Erosion and Sediment Control addresses soil erosion and sediment control by referencing Chapter 128, the Borough of East Rutherford’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.

**Section 327-79:** Stormwater Runoff addresses stormwater runoff for the Borough of East Rutherford’s Surface Water Management Ordinance, which was updated to include all requirements outlined in N.J.A.C. 7:8-5. These changes were presented earlier in this document.

**Section 327-82:** Streets describes the requirements for streets in the Borough of East Rutherford. The Borough of East Rutherford has several street classifications, ranging from “Arterial,” which has a minimum right-of-way of 80 feet, to “Secondary Local,” which has a minimum right-of-way of 50 feet. Street paving widths are a function of the number of units served, whether a street is curbed, whether on-street parking is permitted, whether the interior streets serve lots of two acres or larger, and whether on-site topographical constraints allow design flexibility. Depending on these factors, paving width for secondary local streets has a range from 20 to 32 feet. This section was amended to encourage developers to limit on-street parking to allow for narrower paved widths. This section also required that cul-de-sacs have a minimum radius of 50 feet. Language was added to this section to reduce the minimum radius of cul-de-sac designs. Cul-de-sacs with landscaped islands have a minimum radius of *[insert radius here]*, cul-de-sacs with flush curbs have a minimum radius of *[insert radius here]*, with a *[insert width here]* reinforced shoulder to accommodate larger equipment and emergency vehicles.

Several changes were made to Article VII of the Borough of East Rutherford Code entitled “Zoning Districts and Standards.” The Borough of East Rutherford has 3 types of residential districts. Each district has a maximum percent impervious surface allocation, ranging from 60 percent to Districts, which have a minimum lot size of 5000-sf for R1 & R2 zones and 1-acre for R3 multi-family. The Borough of East Rutherford has 3 types of non-residential districts. Each of these districts has a maximum percent impervious surface allocation, ranging from 80 percent for the light industrial and regional commercial to 90 percent for neighbor commercial. Although each zone has a maximum allowable percent impervious surface, the Borough of East Rutherford Code was 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. The Borough of East Rutherford is evaluating the maximum allowable impervious cover for each zone to determine whether a reduction in impervious cover is appropriate. 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.

## **Maintenance Requirements**

In order to ensure proper functioning and operation of all structural and nonstructural stormwater management measures, the Borough of East Rutherford shall require that maintenance plans be developed for all such measures incorporated into the design of major land developments. All maintenance plans shall meet the requirements specified in Section 5.8 of Subchapter 5 of the New Jersey Stormwater Management Rules. The Borough shall also utilize the maintenance plan recommendation and references contained in the NJDEP Stormwater Best Management Practices Manual. Final maintenance plan requirements will be included in the Borough's Stormwater Control Ordinance and shall also be applied to any stormwater management measure included in the major development activity by the Borough.

In accordance to the maintenance plan requirements contained in the Stormwater Management Rules, all stormwater management measure maintenance plans must include:

1. Specific preventative and corrective maintenance takes and schedules.
2. Cost estimates including the estimate costs of sediment, debris, and trash removal
3. The name, address, and telephone number of those responsible for maintenance

In addition, the maintenance plan must guarantee that preventive and corrective maintenance shall be performed to maintain the function of the stormwater management measure, including (where appropriate) structural repairs and replacements, sediments, debris, and trash removal; restoration of eroded areas; snow and ice removal; fence repair and replacement; restoration of vegetation and repair of non-vegetated linings.

By reference the NJDEP Stormwater Best Management Practices Manual is incorporated into the Borough's Municipal Stormwater Management Plan.

## **Land Use/Build-Out Analysis**

There are four steps to preparing a build-out analysis that satisfies the requirements for the municipal stormwater management plan:

1. Determine the total land area within each of the HUC14s of the municipality.
2. Determine the area of constrained lands within each HUC14 of the municipality.
3. Determine the land available for development by simply subtracting the constrained lands from the total land area for each HUC14. In essence, the land available for development is the agricultural, forest and/or barren lands available within each HUC14. Existing residential, commercial, and industrial areas are also eligible for redevelopment and should be considered as land available for development.
4. For each HUC14, complete a build-out analysis by using the municipal zoning map and applicable ordinances to determine the acreage of new development. Once the build-out acreage of each land use is determined for each HUC14, non-point source loadings can be determined for the build-out scenario. Shown below are examples of build-out analyses for two HUC14s located in the municipality.

A detailed land use analysis for the Borough of East Rutherford was conducted. Figure C-6 illustrates the existing land use in the Borough of East Rutherford based on 1995/97 GIS information from NJDEP. Figure C-7 illustrates the HUC14s within the Borough of East Rutherford. The Borough of East Rutherford zoning map is shown in Figure C-8. Figure C-9 illustrates the constrained lands within the Borough of East Rutherford. (Note: For this sample plan, every constrained land was not mapped.) The build-out calculations



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

Insert Figure C-  
USGS Boundaries Quadrangles

Table T-1: Pollutant Loads by Land Cover

Land Cover	Total Phosphorus Load (lbs/acre/year)	Total Nitrogen Load (lbs/acre/year)	Total Suspended Solids Load (lbs/acre/yr)
High, Med 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, Mixed Urban, Other Urban	1.0	10	120
Agricultural	1.3	10	300
Forest, Water, Wetlands	0.1	3	40
Barrenland/Transitional Area	0.5	5	60

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Source: NJDEP Stormwater BMP Manual 2004.

## Mitigation Plans

The Borough of East Rutherford shall not adopt a Mitigation Plan to allow for the development of land that can not meet the standards presented in N.J.A.C. 7:8-5. The Borough shall exercise its right to deny permits for the development of property that cannot adhere to the standards presented in N.J.A.C. 7:8-5.

### **Definitions**

The following definitions have been developed to supplement those contained in the New Jersey Stormwater Management Rules.

**“Agricultural development”** means land uses normally associated with the production of food, fiber and livestock for sale. Such uses do not include the development of land for the processing or sale of food and the manufacturer of agriculturally related products.

**“Best Management Practices (BMPs)”** are defined as any program, process, location criteria, operating method, measure or device that controls, prevents, removes, or reduces pollution.

**“Category One (C1) Waters”** means Waters of the State, including unnamed waterways that appear on Soil Survey and USGS Topographic Quadrangle within the same HUC 14 watershed, designated in NJAC 7:9B-1.15 (c) through (h) for purposes of implementing the anti-degradation policies set forth at NJAC 7:9B-1.5(d) for protection from measurable changes in water quality characteristics because of their clarity, color, scenic setting, other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources(s).

**“Development”** includes the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or structure, any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land. In the case of development on agricultural land, development means: any activity that requires a State permit; any activity reviewed by the County Agricultural Boards (CAB) and the State Agricultural Development Committee (SADC), and municipal review of any activity not exempted by the Right to Farm Act, N.J.S.A. 4:1C-1 et seq.

**“High pollutant loading areas”** are areas in industrial and commercial developments where solvents and/or petroleum products are loaded/unloaded, stored, or applied, areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than ‘reportable quantities’ as defined by the USEPA at 40 CFR 302.4; areas where recharge would be inconsistent with NJDEP approved remedial action work plan or landfill closure plan and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities.

**“Impervious surface”** means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water. Impervious surfaces include areas such as paved parking lots and concrete sidewalks.

**“Infiltration”** is the process by which water from precipitation seeps into the soil.

**“Low Impact Development (LID)”** attempts to replicate pre-development hydrology to reduce the impacts of development at a lot-level basis, treating rainwater where it falls by creating conditions

that allow the water to infiltrate back into the ground. The primary goals of LID include greater infiltration of stormwater instead of regarding the water as disposable.

**“Major development”** includes those projects that disturb one (1) or more acres of land for the purposes of the Township regulations. Projects that increase impervious surfaces by 0.25 acres or more that are regulated by NJDEP are also considered major development. Disturbance includes the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation. Projects undertaken by any government agency; which otherwise meet the definition of “major development”, but which do not require approval under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq., are also considered “major development.”

**“Non-point source (NPS) pollution”** refers to all sources that cannot be identified as a point discharge. These include stormwater surface runoff and agricultural runoff, among others.

**“Pollutant”** means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

**“Pollution”** refers to the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.

**“Recharge”** means the amount of water from precipitation that infiltrates into the ground and moves below the root zone of surface vegetation.

**“Redevelopment”** refers to alterations that change the “footprint” of a site or building in such a way that result in the disturbance of one acre or more of land. The term is not intended to include such activities as exterior remodeling, which would not be expected to cause adverse stormwater quality impacts and offer no new opportunity for stormwater controls. The NJDEP does not consider pavement resurfacing projects that do not disturb the underlying or surrounding soil, remove surrounding vegetation, or increase the area of impervious surface to be “redevelopment projects.”

**“Riparian”** means an area of land or water within or adjacent to a surface water body.

**“Source material”** means any material(s) or machinery, located at an industrial facility that is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.

**“Stormwater”** means water resulting from precipitation (including rain and snow) that runs off the land’s surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.

**“Stormwater runoff”** means that portion of water from precipitation that flows across the surface of the ground.

**“Threatened and Endangered Species”** include the following: Endangered Species are those whose prospects for survival in New Jersey are in immediate danger because of a loss or change in habitat, over-exploitation, predation, competition, disease, disturbance or contamination. Assistance is needed to prevent future extinction in New Jersey. Threatened Species are those who may become endangered if conditions surrounding them begin to or continue to deteriorate.

**“Time of Concentration (TC)”** is defined as the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed.

**“Total Maximum Daily Load (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 a NJPDES permit to discharge, and NPS, 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.

**“Total Suspended Solids (TSS)”** refers to particles that are suspended in water. Suspended solids in water reduce light penetration in the water column, can clog the gills of fish and invertebrates, and are often associated with toxic contaminants because organics and metals tend to bind to particles. TSS is differentiated from total dissolved solids (TDS) by a standardized filtration process with the dissolved portion passing through the filter.

**“Water Quality Design Storm”** refers to the rainfall event used to analyze and design structural and nonstructural stormwater quality measures (also known as BMPs). As described in the Stormwater Management Rules, the Water Quality Design Storm follows a nonlinear pattern and has a total rainfall depth of 1.25 inches and a total duration of two hours.

**“Wellhead protection areas (WHPAs)”** in New Jersey are mapped areas calculated around a Public Community Water Supply well in New Jersey and are defined as that portion of an aquifer that contributes water to a well over a specified time interval.

## **References**

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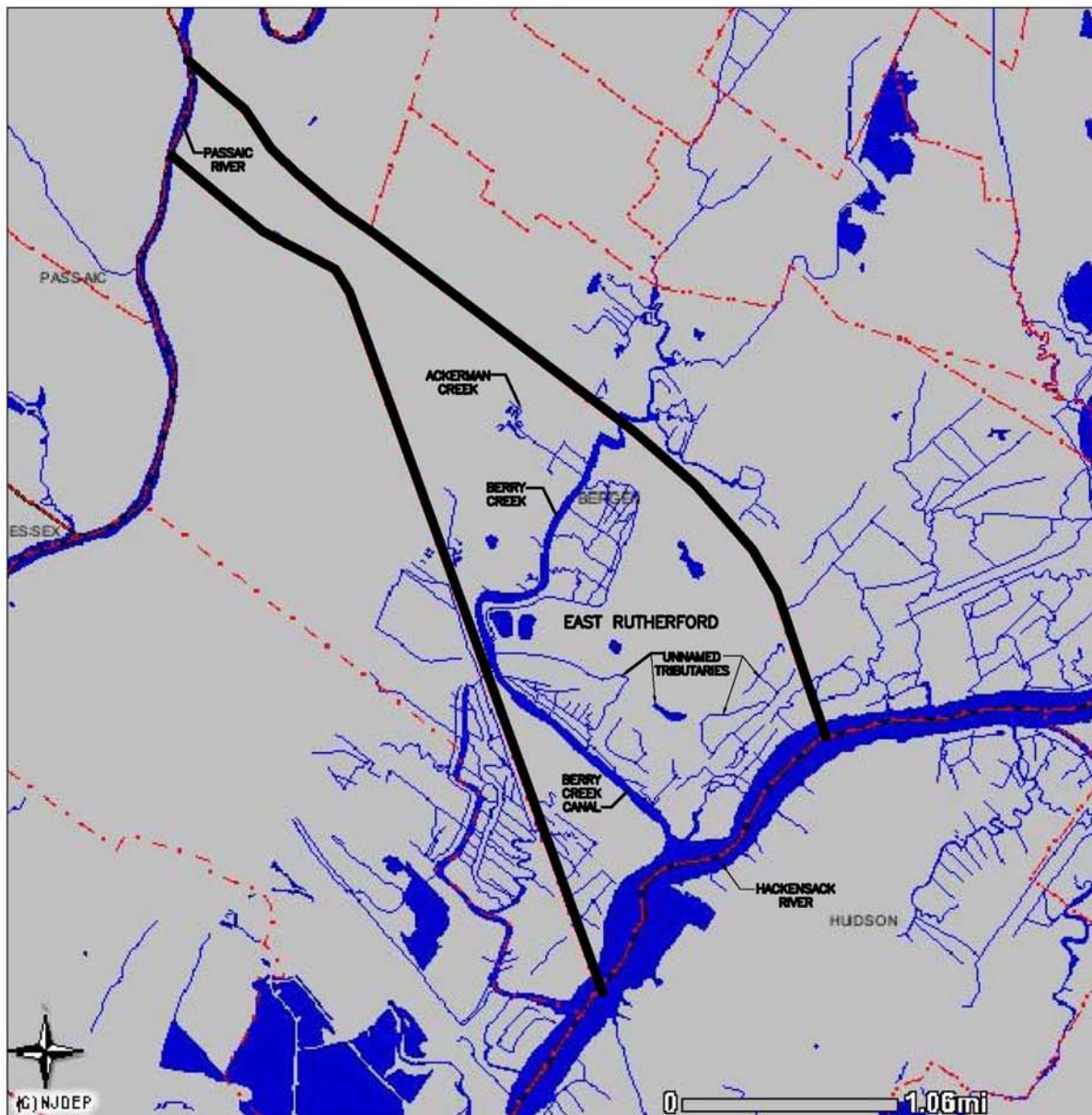
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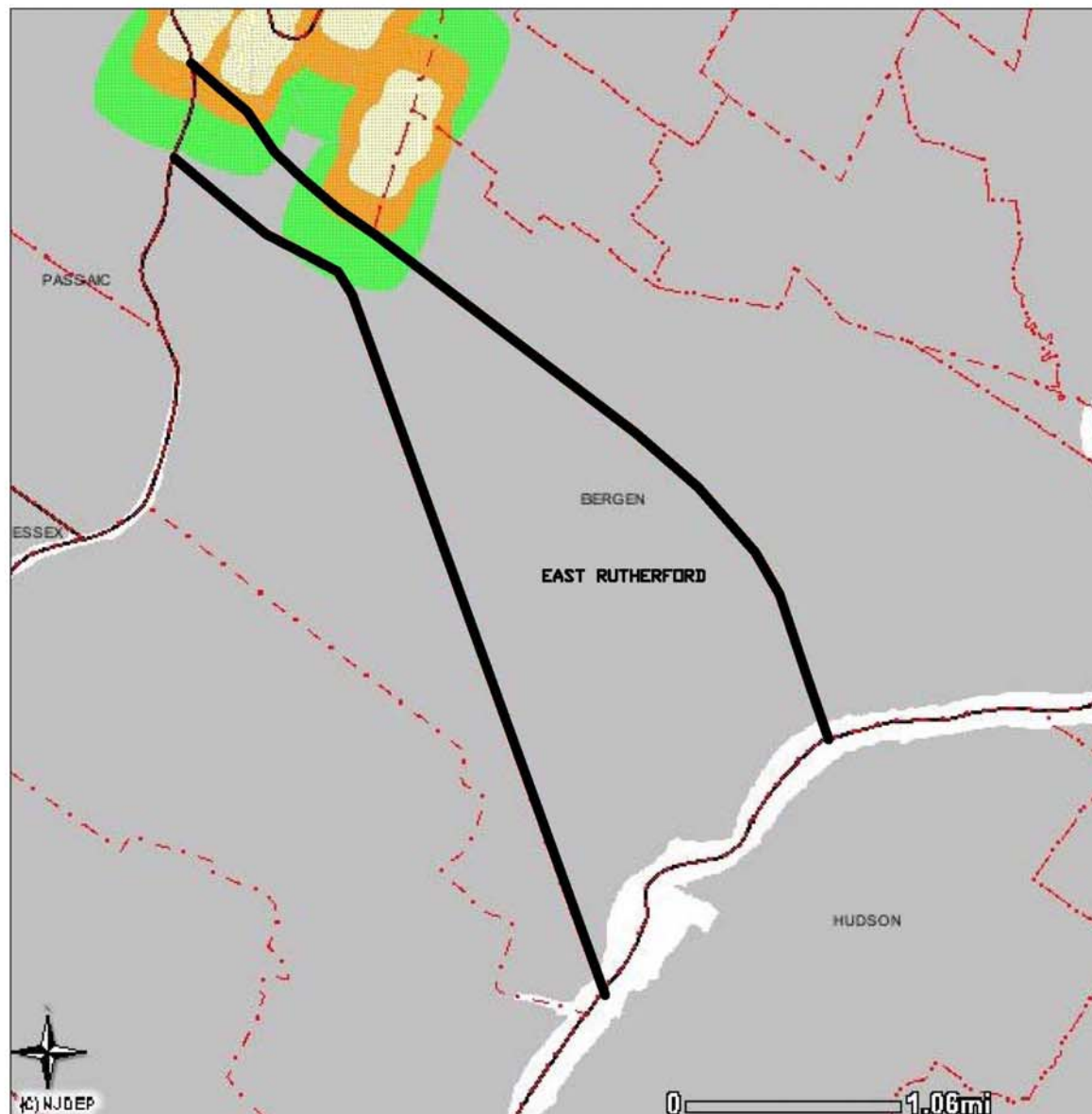
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## BOROUGH WATERWAYS

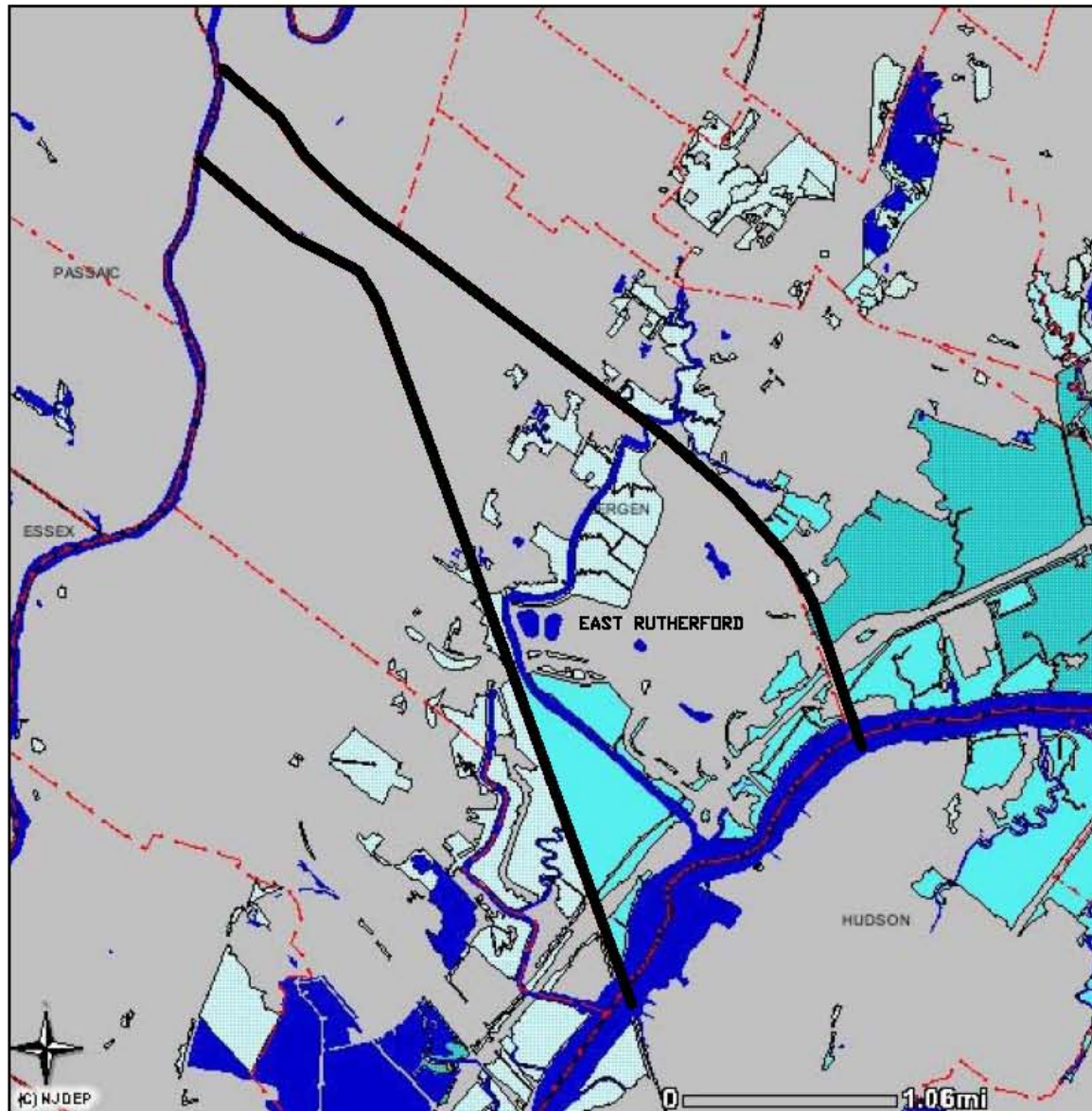




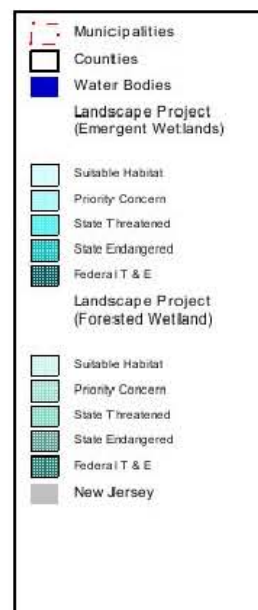


## WELLHEAD PROTECTION AREAS

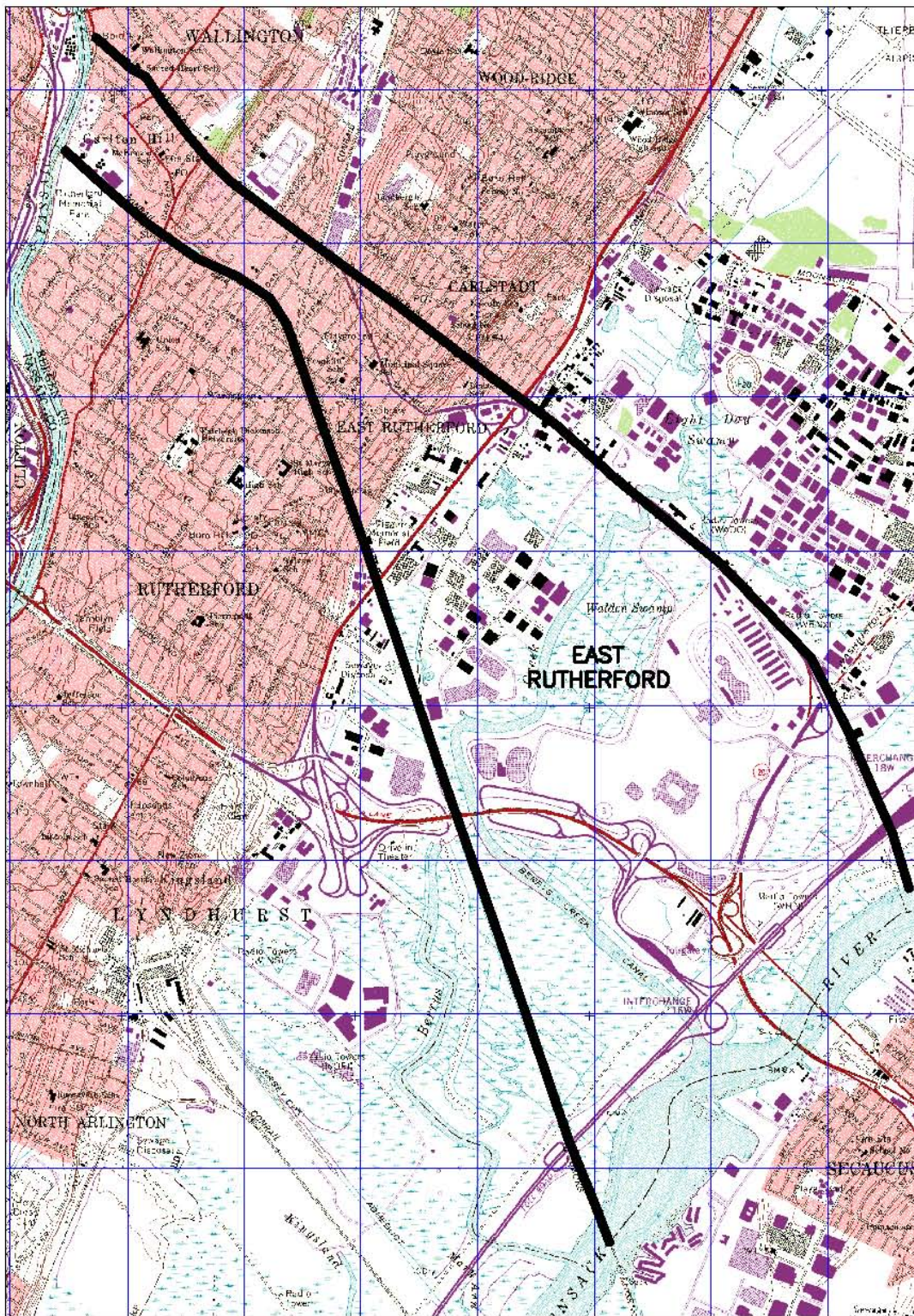




## **WETLANDS AND WATER LAND USES WITHIN THE BOROUGH**







**BOROUGH BOUNDARY ON USGS QUADRANGLES**