

DECEMBER 2004

Borough of
West Cape May

Draft

Municipal Stormwater Management Plan

Prepared By

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REMINGTON
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I. Introduction

The following Municipal Separate Stormwater System (MS4) stormwater plan was prepared by Remington, Vernick & Walberg Engineers for the Borough of West Cape May. The NJDEP "Sample Municipal Stormwater Management Plan" was used as a basis for preparation of the plan, as modified to provide specific information germane to West Cape May.

This **Municipal Stormwater Management Plan (MSWMP)** documents the strategy for the Borough of West Cape May to address stormwater-related impacts. The creation of this plan is required by N.J.A.C.7:14A-25 (Municipal Stormwater Regulations). As required, this plan contains all of the required elements described in N.J.A.C.7:8 (Stormwater Management Regulations).

The plan contained herein 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/quantity and the loss of groundwater recharge that provides base flow in receiving water bodies.

In addition, this plan describes long-term operation and maintenance measures for existing and future stormwater facilities. In accordance with NJAC 7:8, a waiver from performing a build-out analysis will be obtained upon Borough adoption and filing of this plan, on the basis that there is less than one (1) square mile of buildable, undeveloped land within the Borough (**see Existing Conditions, Development Constraints Maps, Appendix A**). The plan also addresses the review and update of existing ordinances, the Borough 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 are sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

II. Goals

The goals of this MSWMP are as follows:

- 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, bridges and other in-stream structures;
- Maintain groundwater recharge;
- Prevent, to the greatest extent feasible, an increase in nonpoint 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, protect public health, safeguard fish and aquatic life and scenic and ecological values, enhance the domestic, municipal, recreational, industrial and other uses of water
- Protect public safety through the proper design and operation of stormwater basins.

To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventative and corrective maintenance strategies are included 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.

III. Stormwater Discussion

Land development can dramatically alter the hydrologic cycle 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.

In addition, 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 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.

IV. Background

The Borough of West Cape May encompasses approximately 1.17 square miles of area in southern Cape May County. It is bordered to its southeast by Cape Island Creek, which serves as the boundary between Cape May and West Cape May. The majority of the Borough (to the north and west) is bordered by Lower Township, including lands within the Higbee Beach State Wildlife Management Area.

The core of West Cape May is a National Historic District. The historic area includes most of Broadway and goes from Park Boulevard to Pacific Ave. and from Sunset Boulevard to Leaming Ave.

Although West Cape May was established as a separate town in 1884, some homes date back many years before then. 19th Century Victorian homes and bungalows are present throughout this area.

The City is developed to near maximum build-out per available land use and environmental regulations. Per review of the “*Existing Conditions*” aerial map and “*Development Constraints*” map, contained within **Appendix A** of this plan, virtually all significant land masses are either developed or environmentally-constrained. These areas are undevelopable due to existing NJDEP Coastal Wetlands and CAFRA regulations.

The permanent population has remained stable since 1960. The 1960 Borough population was 1,030 per the County Master Plan, with resident populations of 1,091, 1,026 and 1,095 for census years 1980, 1990 and 2000, respectively. The County population projection for year 2020 is 1,350 (full-time residents).

In contrast, there is a larger (but relatively stable) summer population projection due the City being a tourist destination. Summer population forecasts, per the County Master Plan, are 6,477 and 7,254 for years 2005 and 2025, respectively.

The 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.

Being a coastal community in nature, West Cape May Borough has no freshwater rivers or major streams within its jurisdiction. Water bodies include the Cape Island Creek to the east, and Pond Creek along the northwest Borough boundary. Per review of the NJDEP’s Integrated Water Quality Monitoring and Assessment Report (Year 2004, 305(b) and 303(d) (Integrated List)), neither of these water bodies are listed as “impaired”.

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, 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. It should be noted that as part of the city's Municipal Separate Storm Sewer (MS4) regulations, existing inlets and outfalls will be inspected and repairs/maintenance will be made. At that time, existing water quantity and erosion problems (if any) will be assessed and abated to the maximum extent practicable.

Since the Borough has been developed for several decades, there has not been a significant increase in impervious cover to the extent that local groundwater recharge is significantly decreasing. However, future major development will comply with the new NJDEP Stormwater design standards (NJAC 7:8), including average annual recharge.

V. **Design and Performance Standards**

The Borough will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality/quantity and loss of groundwater recharge in receiving water bodies. This will be implemented by adoption of the NJDEP Model Stormwater ordinance (**Appendix B**), as amended for use and enforcement within the Borough of West Cape May.

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 by January 5, 2006 (i.e., within 24 months of the effective date of the Stormwater Management Rules).

During construction, Borough inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed.

VI. Plan Consistency

The Borough is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Borough; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) nor any TMDLs. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated 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 storm water 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'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, City inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the Cape-Atlantic Soil Conservation District (CACD).

VII. Nonstructural Stormwater Management Strategies

Non-structural stormwater strategies for design of new developments, or redevelopment, as defined per the NJDEP Stormwater design Regulations (NJAC - 5.3(b)), include the following objectives:

- A. Protection of areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.
- B. Minimizing impervious surfaces and breakup or disconnecting the flow of runoff over impervious surfaces.
- C. Maximum protection of natural drainage features and vegetation.
- D. Minimizing the decrease in the "time of concentration" from pre-construction conditions to post-construction conditions.
- E. Minimizing land disturbance during clearing and grading.
- F. Minimizing soil compaction.
- G. Providing low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides.
- H. Providing vegetated open channel conveyance systems discharging into and through stable vegetative areas.
- I. Providing other source controls to prevent or minimize

It should be noted that due to less of one (1) square mile of vacant or developable lands, outside of environmentally-constrained areas remaining, that the Borough of West Cape May is exempt from the requirement to evaluate the extent to which the Borough's Master Plan implements the non-structural strategies referenced above.

However, as indicated previously, the Borough will adopt the NJDEP model stormwater control ordinance, as amended for use and enforcement within the City. This ordinance includes methodologies for incorporating non-structural stormwater strategies identified above, in design, "to the maximum extent practicable".

If an applicant (or his/her Engineer) contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management strategies identified in (b) below into the design of a particular project, the applicant will identify the strategy and provide a basis for the contention. It is understood that any project requiring NJDEP Land Use Regulation Program permitting or approvals will also be subject to a similar stormwater review by the appropriate agency.

Once the ordinance text is finalized, it will be submitted to the Cape May County Planning Board for review and approval by January 5, 2006 (i.e., 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.

VIII. Land Use/Build-Out Analysis

As stated previously, there is less of one (1) square mile of vacant or developable lands, outside of environmentally-constrained areas remaining in the Borough, that the Borough of West Cape May is exempt from the requirement to perform a Land Use Buildout analysis of the Borough (**refer to Appendix A, Existing Development and Development Constraints Maps for verification**).

IX. Mitigation Plans

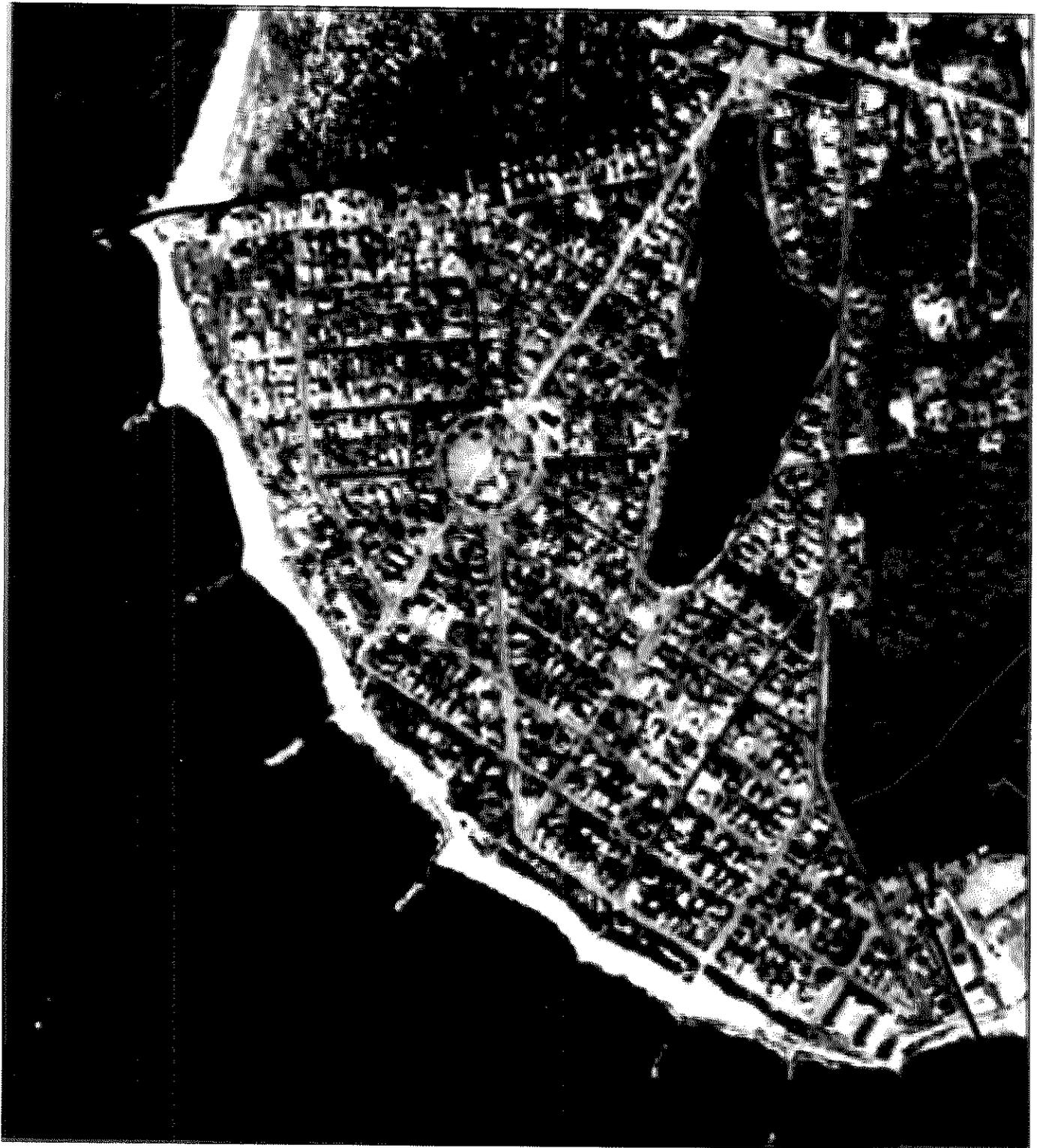
Per review of the optional MS4 mitigation plan requirement with West Cape May Borough and Planning Board representatives, the Planning Board has deferred identifying any specific existing areas in need of mitigation at this time.

If a developer of a future project(s) presents a project deemed in the Borough's interest, and is in need of a waiver, the Borough may amend its stormwater management plan element to identify specific projects for which a waiver may be sought. Said amendment will be submitted to the County and/or NJDEP for review in accordance with the regulations.

X. Stream Corridor Protection Plan (Optional)

It should be noted that there are no Special Water Resource protection areas designated Category One (NJAC 7:9B) or upstream perennial or intermittent streams of said waters within the Borough of West Cape May. If such water bodies are found or designated at a later date, future major development within 300 feet of said waters will be regulated in accordance with NJAC 7:8-5.5(h) as outlined in the model stormwater ordinance.

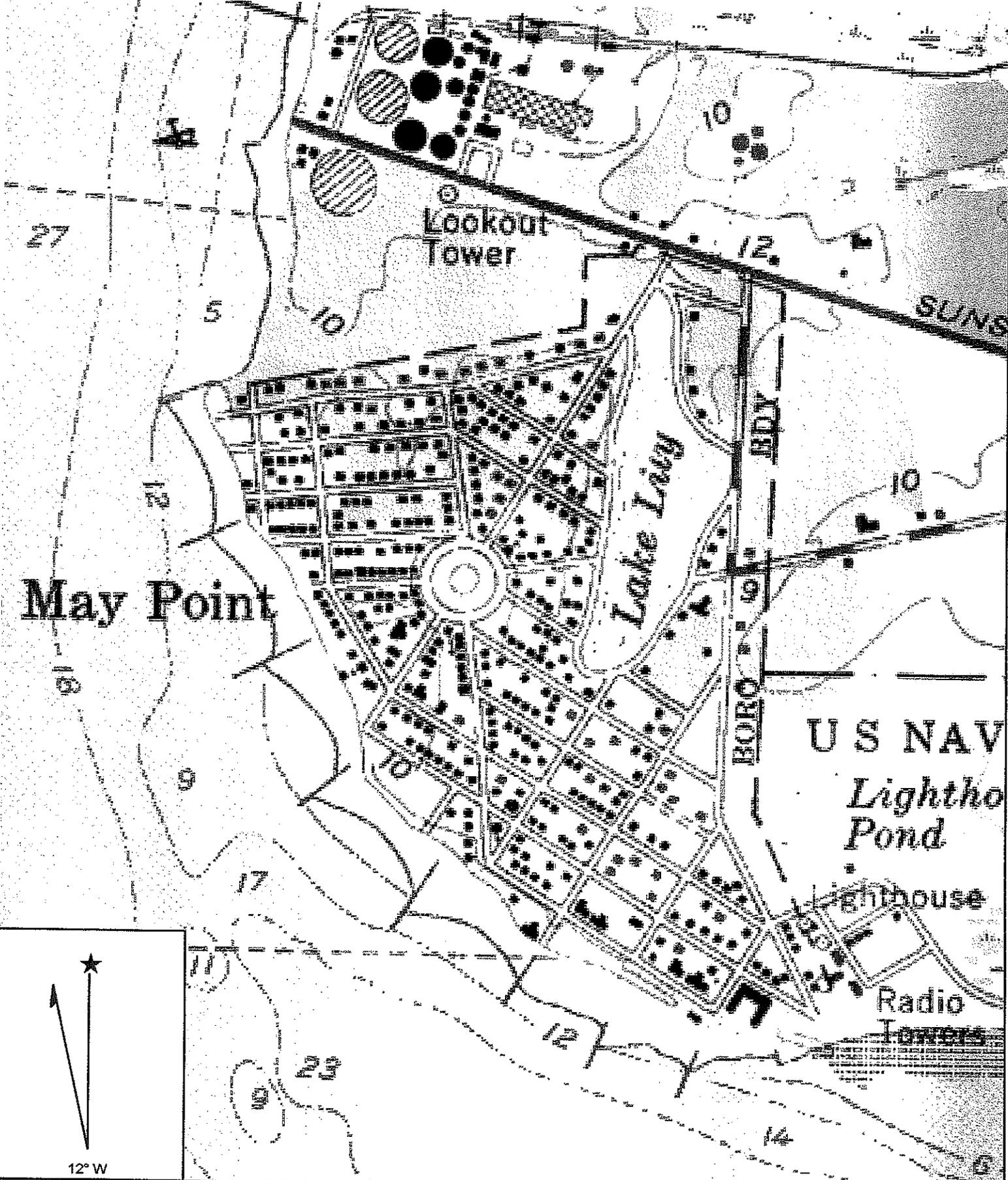
Figure C-2: Borough Waterways on 2002 Aerial Photo



1 inch equals 590 feet

Legend

-  Cape May Point Streams
-  Cape May Point Limit



Name: CAPE MAY
 Date: 3/29/2005
 Scale: 1 inch equals 667 feet

Location: 038° 56' 15.30" N 074° 57' 59.00" W
 Caption: Figure C-3: USGS Map of Cape May Point

Figure C-4: Groundwater Recharge Areas

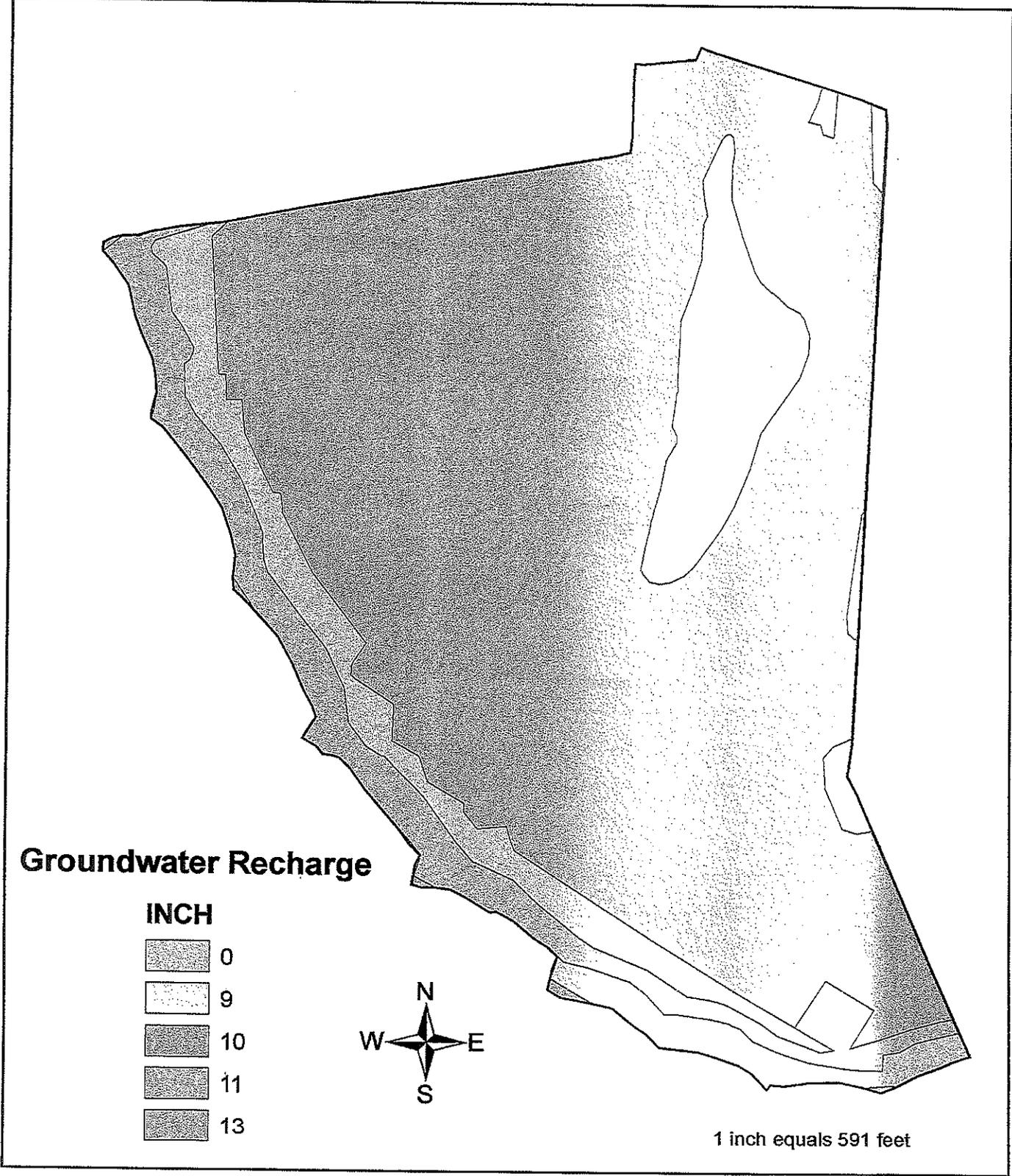


Figure C-5: 1995 Land Use

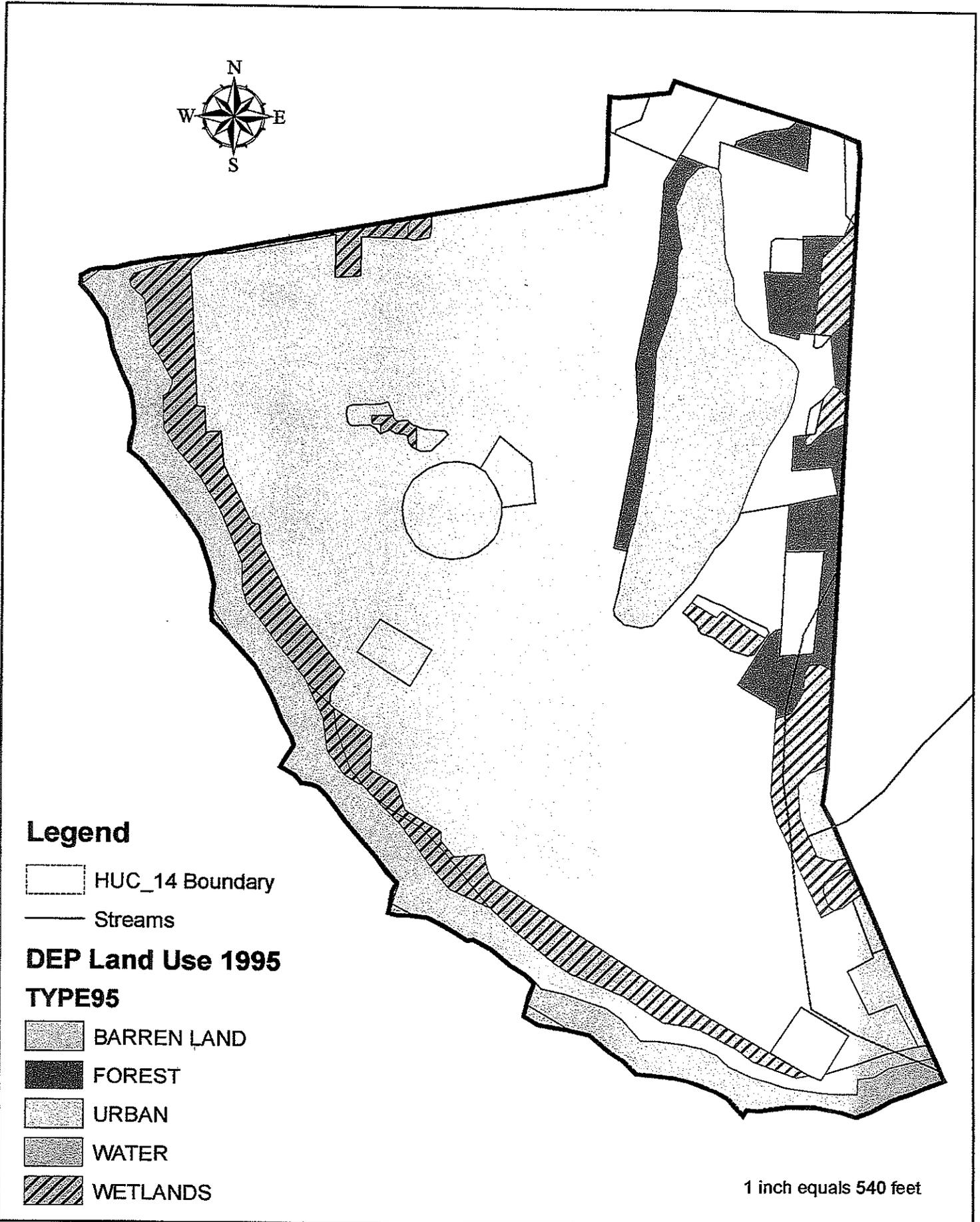
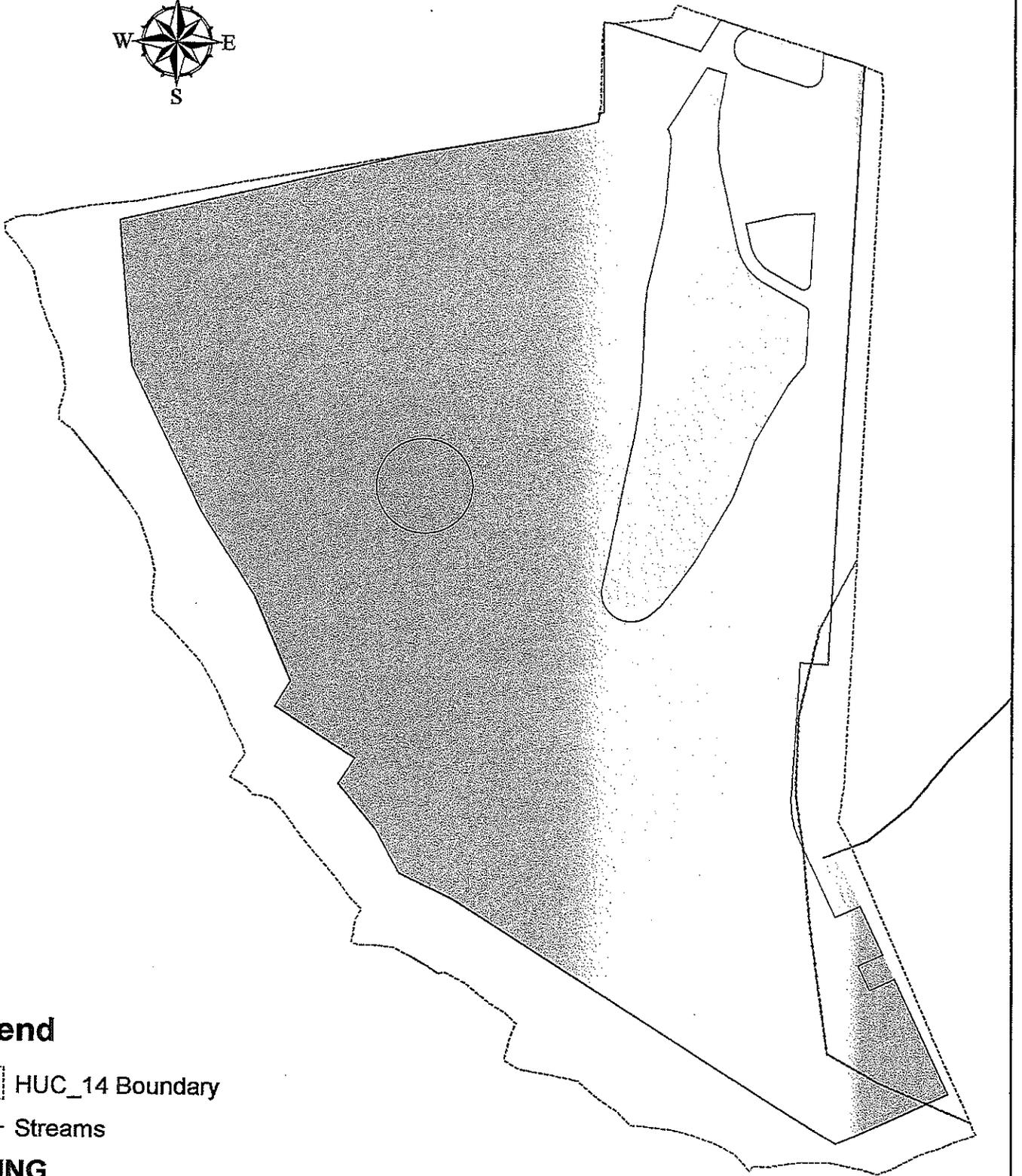
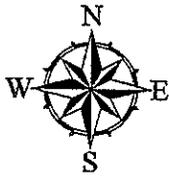


Figure C-6: Zoning



Legend

-  HUC_14 Boundary
-  Streams

ZONING

-  P
-  R-1

1 inch equals 540 feet