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US Army Corps
of Engineers

Draft Environmental Impact Statement on the Special Area Management Plan for the Hackensack Meadowlands District, NJ

Executive Summary

June 1995



In partnership with:

National Oceanic and Atmospheric Administration
New Jersey Department of Environmental Protection
Hackensack Meadowlands Development Commission

**Draft
Environmental Impact Statement
on the Special Area Management Plan
for the Hackensack Meadowlands District, New Jersey
June 1995**

Prepared by:
U.S. Environmental Protection Agency - Region II
U.S. Army Corps of Engineers - New York District

Abstract: In accordance with the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers' (USACE) regulations for implementing NEPA; the U.S. Environmental Protection Agency's (EPA) procedures for the voluntary preparation of environmental impact statements (EIS) on significant regulatory actions, and the 1980 Amendments to the Coastal Zone Management Act, a draft EIS has been prepared on the Special Area Management Plan (SAMP) for the Hackensack Meadowlands District (HMD), New Jersey.

The HMD is a 32 square mile area that includes portions of 14 municipalities in two counties in northeastern New Jersey. The HMD, which once contained approximately 17,000 acres of wetlands, has lost nearly one-half of those wetlands as a result of hydrologic and environmental alteration, including filling and draining for development. In addition, degrading land practices, such as landfilling and unregulated dumping, led to a number of significant environmental problems, and have worked to transform the formerly diverse system into one in which Phragmites is the predominant vegetation type. Nevertheless, because of its position in the landscape, the HMD performs a number of significant ecological functions and supports a diverse community of associated wildlife.

The remaining undeveloped areas within the HMD are primarily wetlands (approximately 8,500 acres including open water) and are under substantial development pressure. The existing Master Plan for the HMD pre-dates the enactment of various environmental statutes, including the Clean Water Act. Because of this, it does not address existing environmental mandates. As a result, conflicts have arisen between the agency that regulates land use in the District (the Hackensack Meadowlands Development Commission - [HMDC]), the regulated community, and federal and State agencies over construction activities that involve discharges of fill in wetlands.

In recognition of the need to resolve these conflicts and to protect remaining natural resources, EPA, USACE, and HMDC, along with the National Oceanic and Atmospheric Administration (NOAA), and the New Jersey Department of Environmental Protection (NJDEP) entered into a Memorandum of Understanding to prepare a Special Area Management Plan (SAMP) for the HMD. The SAMP will be used to form the HMD's new Master Plan and will provide for both environmental protection and appropriate development.

The SAMP is described in this draft EIS, which has been prepared jointly by EPA and USACE, with the assistance of NOAA, NJDEP, HMDC and nine other federal and state cooperating agencies. Essentially, the SAMP is a comprehensive plan providing for natural resource protection, remediation of pollution, and sustainable growth in the HMD over the next 20 years. In this regard, it presents a comprehensive statement of policies and criteria to guide future land use and environmental management, including preservation, restoration, and enhancement of the HMD's natural resources. The SAMP also fosters compliance of future development with environmental laws and regulations, including the Clean Water Act Section 404(b)(1) Guidelines, through a series of regulatory products.

Major topics addressed in the draft EIS include potential impacts to wetlands and other aquatic resources, terrestrial ecosystems, threatened and endangered species, remnant and unique habitats, water quality, soils, ground water, land use and zoning, transportation, air quality, noise, and cultural resources. The preferred alternative represents the most environmentally sound, cost effective, and implementable alternative evaluated in the draft EIS.

Public Hearings:

Date:	August 29, 1995	August 31, 1995
Place:	HMDC - Environment Center 1 DeKorte Park Plaza Lyndhurst, New Jersey	Rutherford Borough Hall 176 Park Avenue Rutherford, New Jersey
Time:	2:00 p.m. and 7:00 p.m.	7:00 p.m.

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Written Comments will be received by EPA or USACE for 60 days following publication of a notice of availability in the Federal Register.

Approved by:

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Thomas A. York
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Colonel, Corps of Engineers
New York District Engineer

June 20, 1995
Date

19 June 95
Date

Contents

Contents

<i>List of Figures</i>	iii	
<i>List of Tables</i>	iv	
<i>List of Acronyms and Abbreviations</i>	v	
Chapter 1	Purpose and Need for the Proposed Action	ES-3
	1.1 Description of EPA/ACE Action	ES-3
	1.2 Memorandum of Understanding	ES-3
	1.3 Special Area Management Plans (SAMPs)	ES-3
	1.4 Description of the Hackensack Meadowlands District	ES-4
	1.5 Need for Environmental Improvement in the Meadowlands District	ES-8
	1.6 Need for Growth in the Meadowlands District	ES-12
	1.7 Need for Transportation System Improvements	ES-15
Chapter 2	Analysis of Alternatives	ES-17
	2.1 Out-of-District Alternatives	ES-18
	2.2 In-District Alternatives Analysis	ES-23
	2.3 Hybrid Alternative Analysis	ES-26
	2.4 Environmental Improvement Program Alternatives	ES-30
	2.5 Preferred Alternative	ES-36
Chapter 3	Environmental Impacts of the Preferred Alternative	ES-41
	3.1 Wetland Impacts	ES-41
	3.2 Threatened and Endangered (T/E) Species Habitats Impacts ..	ES-45
	3.3 Other Aquatic Resources Impacts	ES-49
	3.4 Terrestrial Ecosystems Impacts	ES-50
	3.5 R/U Habitat Impacts	ES-52

Contents
(continued)

3.6	Water Quality Impacts	ES-52
3.7	Soils Impacts	ES-55
3.8	Surface Water Hydrology Impacts	ES-55
3.9	Groundwater Impacts	ES-56
3.10	Land Use and Zoning Impacts	ES-56
3.11	Financing Local Government Services Impacts	ES-57
3.12	Utility Infrastructure Impacts	ES-58
3.13	Population and Employment Impacts	ES-58
3.14	Community Facilities Impacts	ES-59
3.15	Transportation Impacts	ES-60
3.16	Air Quality Impacts	ES-62
3.17	Noise Impacts	ES-63
3.18	Cultural Resource Impacts	ES-64
3.19	Solid Waste Impacts	ES-65
3.20	Hazardous Waste Remediation Impacts	ES-66
<i>Chapter 4</i>	Implementation of the SAMP	ES-67
4.1	Special Area Management Plan Components	ES-68
4.2	Revisions to HMDC Plans, Policies, and Procedures	ES-72
4.3	SAMP Regulatory Products	ES-77
4.4	General Schedule for Implementation Actions	ES-82

List of Figures

<i>Figure</i>		<i>Page</i>
ES-1	Location of Hackensack Meadowlands District	ES-5
ES-2	Political Boundaries in Hackensack Meadowlands District	ES-6
ES-3	Wetland Areas	ES-7
ES-4	Historic Solid Waste Activities (before 1970)	ES-10
ES-5	Preferred Alternative	ES-32
ES-6	Potential Wetland Fill and Mitigation for Preferred Alternative	following ES-44
ES-7	Peregrine Falcon Potential Indirect Impacts	ES-47
ES-8	Terrestrial Resource Impacts of Preferred Alternative	ES-51
ES-9	General Locations of EIP-Proposed Parks and Preserves	ES-61
ES-10	Land Uses Under the Preferred Alternative	following ES-70

List of Tables

<i>Table</i>		<i>Page</i>
ES-1	HMDC Development Needs	ES-15
ES-2	Planning Areas	ES-29
ES-3	Satellite Areas	ES-31
ES-4	Transportation Improvements Included in the Preferred Alternative	ES-38
ES-5	Example Management Measures for Sources of Nonpoint Pollution	ES-70
ES-6	District Wetland Resources and SAMP Wetlands Conservation Actions	ES-74

List of Acronyms and Abbreviations

AA	(Wetland) Assessment Area
AC	Acres
ACE	United States Army Corps of Engineers
AN	Ammonia Nitrogen
APP	Abbreviated Permitting Process
ATP	Anti-Tampering Program
ATV	All Terrain Vehicle
AVID	Advanced Identification of Wetlands
AVO	Average Vehicle Occupancy
BA	Biological Assessment
BCUA	Bergen County Utilities Authority
BMP	Best Management Practice
BOD	Biological Oxygen Demand
BP	Before Present
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAC	Citizen's Advisory Committee
CBA	Clinton Bogert Associates
CDM	Camp Dresser & McKee
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code Of Federal Regulations
CO	Carbon Monoxide
COAH	Council on Affordable Housing
COD	Chemical Oxygen Demand
CUPR	Center for Urban Policy Research
CSO	Combined Sewer Overflow
CWA	Clean Water Act
CZARA	Coastal Zone Act Reauthorization Amendments
CZMA	Coastal Zone Management Act
dBA	Decibels (A-weighted)
DCA	Department of Community Affairs
DO	Dissolved Oxygen
ECRA	Environmental Cleanup Responsibility Act
EDF	Environmental Defense Fund
EIP	Environmental Improvement Program
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
F	(degrees) Fahrenheit
FAR	Floor Area Ratio
FAR	Functional Assessment Report
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FR	Federal Register
FTA	Federal Transit Administration
FWS	United States Fish and Wildlife Service

List of Acronyms and Abbreviations
(continued)

GP	General Permit
GPM	Gallons Per Minute
HC	Hydrocarbons
HCIA	Hudson County Improvement Authority
HEP	Habitat Evaluation Procedure
HMD	Hackensack Meadowlands District
HMDC	Hackensack Meadowlands Development Commission
HMDCEC	Hackensack Meadowlands Development Commission Environment Center
HMRDA	Hackensack Meadowlands Reclamation and Development Act
HMTM	Hackensack Meadowlands Transportation Model
HRM	Hackensack River Miles
HWC	Hackensack Water Company
ISRA	Industrial Site Recovery Act
ISTEA	Intermodal Surface Transportation Efficiency Act
IVA	Indicator Value Assessment (Method)
KG	Kilogram
L	Liter
L_{eq}	Equivalent Sound Level
MA	Mitigation Area
MGD	Million Gallons Per Day
MIMAC	Meadowlands Interagency Mitigation Advisory Committee
ML	Milliliter
MLUL	Municipal Land Use Law
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization
MUA	Municipal Utilities Authority
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NBMUA	North Bergen Municipal Utilities Authority
NEA	National Endowment for the Arts
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NJAC	New Jersey Administrative Code
NJAS	New Jersey Audubon Society
NJCMP	New Jersey Coastal Management Program
NJDEP	New Jersey Department of Environmental Protection
NJDOH	New Jersey Department of Health
NJDOL	New Jersey Department of Labor
NJDOT	New Jersey Department of Transportation
NJGS	New Jersey Geological Survey
NJIT	New Jersey Institute of Technology
NJPDES	New Jersey Point Discharge Elimination System
NJSA	New Jersey Statutes Annotated
NJSEA	New Jersey Sports and Exposition Authority
NJT	New Jersey Transit
NJTA	New Jersey Turnpike Authority
NJTPA	North Jersey Transportation Planning Authority
NMFS	National Marine Fisheries Service

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CAAA	Clean Air Act Amendments
CAC	Citizen's Advisory Committee
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CDM	Camp Dresser & McKee
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CZMA	Coastal Zone Management Act
dBA	Decibels (A-weighted)
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EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
F	(degrees) Fahrenheit
FAR	Floor Area Ratio
FAR	Functional Assessment Report
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FR	Federal Register
FTA	Federal Transit Administration
FWS	United States Fish and Wildlife Service

List of Acronyms and Abbreviations
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GPM	Gallons Per Minute
HC	Hydrocarbons
HCIA	Hudson County Improvement Authority
HEP	Habitat Evaluation Procedure
HMD	Hackensack Meadowlands District
HMDC	Hackensack Meadowlands Development Commission
HMDCEC	Hackensack Meadowlands Development Commission Environment Center
HMRDA	Hackensack Meadowlands Reclamation and Development Act
HMTM	Hackensack Meadowlands Transportation Model
HRM	Hackensack River Miles
HWC	Hackensack Water Company
ISRA	Industrial Site Recovery Act
ISTEA	Intermodal Surface Transportation Efficiency Act
IVA	Indicator Value Assessment (Method)
KG	Kilogram
L	Liter
L_{eq}	Equivalent Sound Level
MA	Mitigation Area
MGD	Million Gallons Per Day
MIMAC	Meadowlands Interagency Mitigation Advisory Committee
ML	Milliliter
MLUL	Municipal Land Use Law
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization
MUA	Municipal Utilities Authority
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NBMUA	North Bergen Municipal Utilities Authority
NEA	National Endowment for the Arts
NEPA	National Environmental Policy Act
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NJAC	New Jersey Administrative Code
NJAS	New Jersey Audubon Society
NJCMP	New Jersey Coastal Management Program
NJDEP	New Jersey Department of Environmental Protection
NJDOH	New Jersey Department of Health
NJDOL	New Jersey Department of Labor
NJDOT	New Jersey Department of Transportation
NJGS	New Jersey Geological Survey
NJIT	New Jersey Institute of Technology
NJPDES	New Jersey Point Discharge Elimination System
NJSA	New Jersey Statutes Annotated
NJSEA	New Jersey Sports and Exposition Authority
NJT	New Jersey Transit
NJTA	New Jersey Turnpike Authority
NJTPA	North Jersey Transportation Planning Authority
NMFS	National Marine Fisheries Service

NOAA	National Oceanic and Atmospheric Administration
NOX	Oxides of Nitrogen
NURP	National Urban Runoff Program
OSP	Office of State Planning
PA	Planning Area
PA NY & NJ	Port Authority of New York & New Jersey
PATH	Port Authority Trans Hudson
PIR	Public Interest Review
PN	Public Notice
PPM	Parts Per Million
PPT	Parts Per Thousand
PRP	Potentially Responsible Party
P/SA	Planning/Satellite Area
PSE&G	Public Service Gas & Electric
PVSC	Passaic Valley Sewerage Commission
PVWC	Passaic Valley Water Commission
RCRC	Resource Conservation Recovery Act Recovery Program
RERC	Real Estate Research Corporation
RGL	Regulatory Guidance Letter
ROD	Record of Decision
ROW	Right-of-Way
RTAQPO	Regional Transportation Air Quality Planning Organization
R/U	Remnant/Unique (Habitat)
SA	Satellite Area
SAC/TAG	Site Action Committee/Technical Advisory Group
SAMP	Special Area Management Plan
SCP	Scientific Chemical Processing
SCS	United States Soil Conservation Service
SF	Square Foot (Feet)
SIP	State Implementation Plan
SMUA	Secaucus Municipal Utilities Authority
SWAC	Solid Waste Advisory Council
SWMA	Solid Waste Management Act
SPA	Specially Planned Area
SS	Social Significant (Attribute)
SS	Suspended Solids
SWMM	Storm Water Management Model
TAZ	Traffic Analysis Zone
TCM	Transportation Control Measures
TDM	Transportation Demand Management
TDR	Transfer of Development Rights
T/E	Threatened/Endangered (Species)
TI	Transportation Improvement
TIP	Transportation Improvement Programs
TKN	Total Kjeldahl Nitrogen
TN	Total Nitrogen
TPY	Tons Per Year
TRANSCO	Transcontinental Gas Pipeline Corporation
TSP	Total Suspended Particulates
UG	Microgram

List of Acronyms and Abbreviations
(continued)

UOP	Universal Oil Products
USACE	United States Army Corps of Engineers
USDOI UPAR	United States Department of Interior Urban-Park and Recreation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
V/C	Volume-to-Capacity Ratio
VHD	Vehicle Hours of Delay
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
WET	Wetlands Evaluation Technique
WH	Wildlife Habitat (Attribute)
WMA	Wildlife Management Area
WQ	Water Quality Improvement (Attribute)

Executive Summary

Executive Summary

This Executive Summary (ES) provides a synopsis of the Hackensack Meadowlands District Special Area Management Plan/Environmental Impact Statement (SAMP/EIS). The SAMP is a comprehensive plan providing for natural resource protection, remediation of pollution, and reasonable economic growth in the District. It presents a comprehensive statement of policies and criteria to guide future land use and environmental management in the District, including preservation, restoration, and enhancement of the District's natural resources. More specifically, the SAMP proposes a balanced plan for managing the District's environmental resources and meeting economic and social needs.

In preparing this Executive Summary, the information presented in the Draft SAMP/EIS has been reorganized, as follows:

Chapter 1 of the ES condenses the findings of Section 1 and Section 2 of the SAMP/EIS. Section 1 of the SAMP/EIS describes the need to prepare a SAMP/EIS in the Hackensack Meadowlands District, and identifies the objectives of the SAMP/EIS. In Section 2 of the SAMP/EIS the need for environmental improvement in the District is presented, together with a program, proposed by the Hackensack Meadowlands Development Commission (HMDC), for extensive environmental improvements in the District.

Chapter 2 of the ES summarizes the results of Section 4 of the SAMP/EIS. In Section 4 of the SAMP/EIS a range of land management alternatives for the District are compared, and other alternatives, including out-of-District growth, are examined. Section 4 of the SAMP/EIS concludes with the identification of a Preferred Alternative plan for the District.

Chapter 3 of the ES highlights the findings of Section 3 and Section 5 of the SAMP/EIS. In Section 5 of the SAMP/EIS the environmental effects of the Preferred Alternative are evaluated. The current environmental conditions in the Hackensack Meadowlands are reviewed in Section 3 of the SAMP/EIS.

Chapter 4 of the ES outlines the recommendations of Section 6 of the SAMP/EIS. Section 6 of the SAMP/EIS presents the mechanisms for implementation of the SAMP and the proposed regulatory enhancements that result from the SAMP.

For additional information the reader is directed to the Draft SAMP/EIS, and Appendices A through V that accompany the SAMP/EIS. (The Appendices provide supporting technical information about the evaluations and analyses that were conducted for the EIS.)

Executive Summary

The lead agencies responsible for the preparation of the Hackensack Meadowlands SAMP/EIS are the US Environmental Protection Agency (EPA) and the US Army Corps of Engineers (ACE). Other agencies that participated substantially in the preparation of the SAMP/EIS are the National Oceanic and Atmospheric Administration (NOAA), the New Jersey Department of Environmental Protection (NJDEP), and the Hackensack Meadowlands Development Commission (HMDC).

Chapter 1

Purpose and Need for the Proposed Action

1.1 Description of the EPA/ACE Action

The "action" addressed in this Environmental Impact Statement (EIS) is the development and implementation of a Special Area Management Plan (SAMP) for the Hackensack Meadowlands District. The SAMP is a comprehensive plan providing for natural resource protection, remediation of pollution, and reasonable economic growth in the District. It presents a comprehensive statement of policies and criteria to guide future land use and environmental management activities in the District, including preservation, restoration, and enhancement of the District's natural resources. While the SAMP has been prepared to guide management of the District over the next 20 years (the planning horizon is year 2015), no significant growth would be accommodated in the District beyond that which is included in the SAMP. The SAMP also fosters compliance of future development with environmental laws and regulations, including the Clean Water Act Section 404(b)(1) Guidelines.

Implementation of the SAMP is expected to result in changes to regulatory processes for fill and construction activities under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (CWA). These regulations are administered by the US Army Corps of Engineers (ACE) as the permitting authority and the US Environmental Protection Agency (EPA) as the Section 404 oversight agency. Because of the potentially significant environmental consequences of the SAMP, ACE and EPA agreed to prepare an Environmental Impact Statement (EIS) for the SAMP. The process used by EPA and ACE to prepare the programmatic EIS on the SAMP is consistent with the federal regulations of the Council on Environmental Quality as well as the regulations of each of the lead federal agencies for the EIS.

1.2 Memorandum of Understanding

In recognition of the environmental and economic needs of the District, and the need for additional coordination of regional planning and regulatory process, EPA and ACE entered into a Memorandum of Understanding (MOU) on September 14, 1988 with the Hackensack Meadowlands Development Commission (HMDC, the local land use planning agency), the New Jersey Department of Environmental Protection (NJDEP), and the National Oceanic and Atmospheric Administration (NOAA) that calls for the preparation and implementation of a SAMP for the Hackensack Meadowlands District. The purpose of the SAMP is to facilitate compliance of future development activities with applicable environmental statutes and regulations.

1.3 Special Area Management Plans (SAMPs)

The Hackensack Meadowlands District is located within New Jersey's Coastal Zone. The 1980 Amendments to the Coastal Zone Management Act define a Special Area Management Plan as a "comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies,

standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographical areas within the coastal zone.”

A SAMP provides predictability to development interests, and environmental interests are assured that individual and cumulative impacts are analyzed in the context of broad ecosystem needs. A SAMP also establishes an area-wide basis for regulatory actions, founded on an understanding of the cumulative effects of changes in the environment. A SAMP can conclude with definitive regulatory products that include streamlined permit processing procedures and Section 404(c) restrictions for undesirable activities.

ACE provided guidance regarding the development of SAMPs in Regulatory Guidance Letter (RGL) Nos. 86-10 and 92-03. Consistent with the RGL and the SAMP MOU, the following regulatory products—guiding future land use management in the Hackensack Meadowlands District—will be implemented pursuant to the SAMP/EIS process:

- appropriate local/state approvals, and ACE general permit (GP) and abbreviated processing procedure (APP) for activities in specifically defined situations; and,
- local/state restrictions and EPA Section 404(c) restrictions for undesirable activities.

Individual permit reviews are available for activities that do not fall into either category or are inconsistent with the SAMP. SAMP implementation actions and regulatory enhancements selected for the Hackensack Meadowlands SAMP are discussed in Section 6 of the EIS.

1.4 Description of the Hackensack Meadowlands District

The Hackensack Meadowlands District (District) is a 32 square mile area located in Bergen and Hudson Counties in New Jersey, less than five miles from New York City. The location of the Hackensack Meadowlands District in New Jersey and New York is shown in Figure ES-1. The political boundaries for the District, its member municipalities, and the surrounding area are shown in Figure ES-2.

The Hackensack River, which is tidal in this area, travels through the middle of the District in a north-south direction, roughly dividing the District in half. The District includes portions of 14 municipalities, ten in Bergen County and four in Hudson County. Covering about 20,000 acres (32 square miles), the District contains approximately 11,500 acres of upland, and 8,500 acres of wetland and open water. The wetlands in the District are mapped in Figure ES-3. Most of the upland areas are developed, and the principal land uses in the uplands are industrial, landfill (including orphan sites), institutional, and commercial. Undeveloped areas within the District are largely wetlands, and these areas are under intense development pressure.

The District is a governmental jurisdiction, within which the Hackensack Meadowlands Development Commission (HMDC) is the agency responsible for land use planning, implementation of zoning controls, subdivision and site plan review and approval, regional solid waste management, and protection of the environment. HMDC is one of only two planning and environmental management agencies in NJ with regional authority. The existing HMDC Master Plan is a program element of the NJ Coastal Management Program, and is used

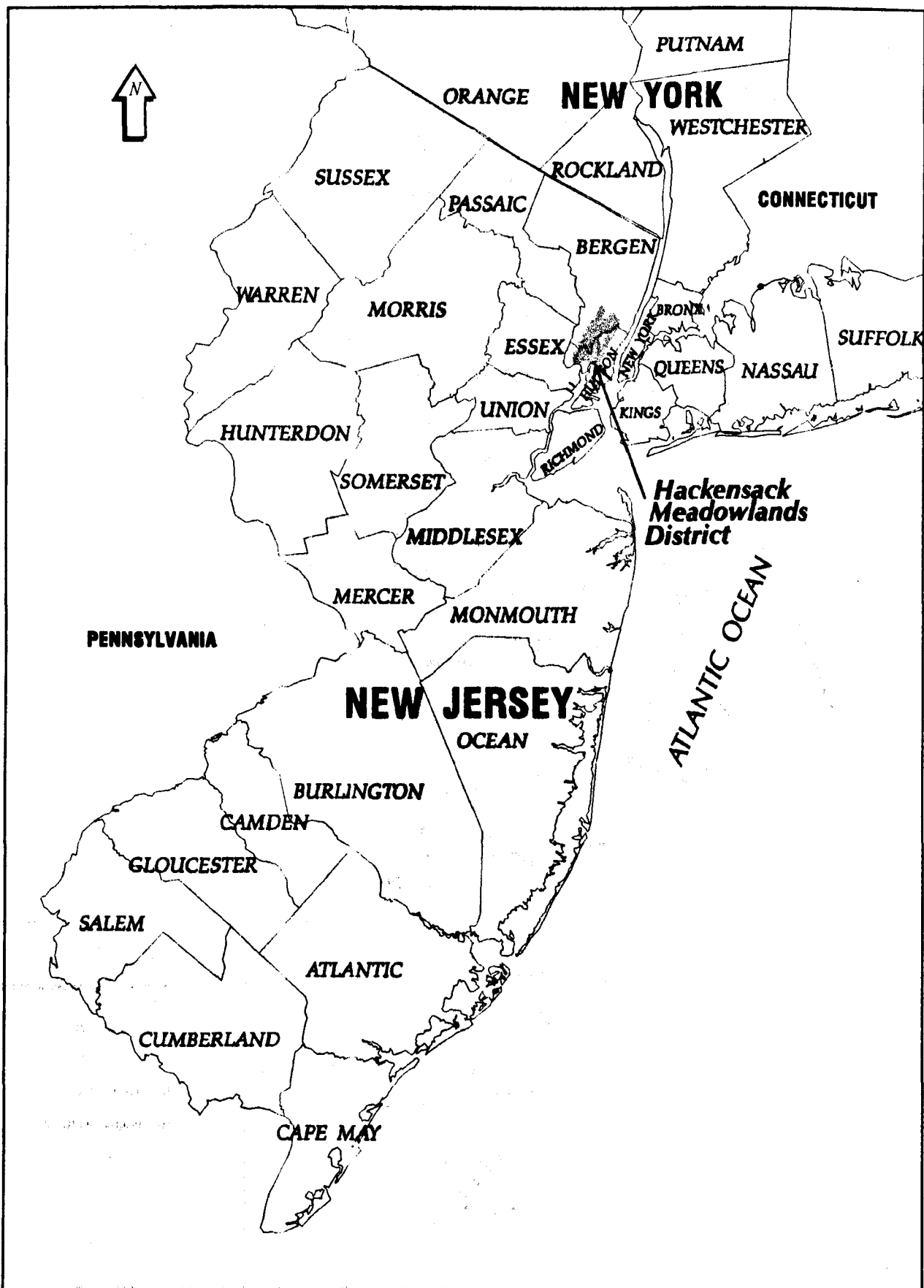


Figure ES-1
Location of
Hackensack Meadowlands District

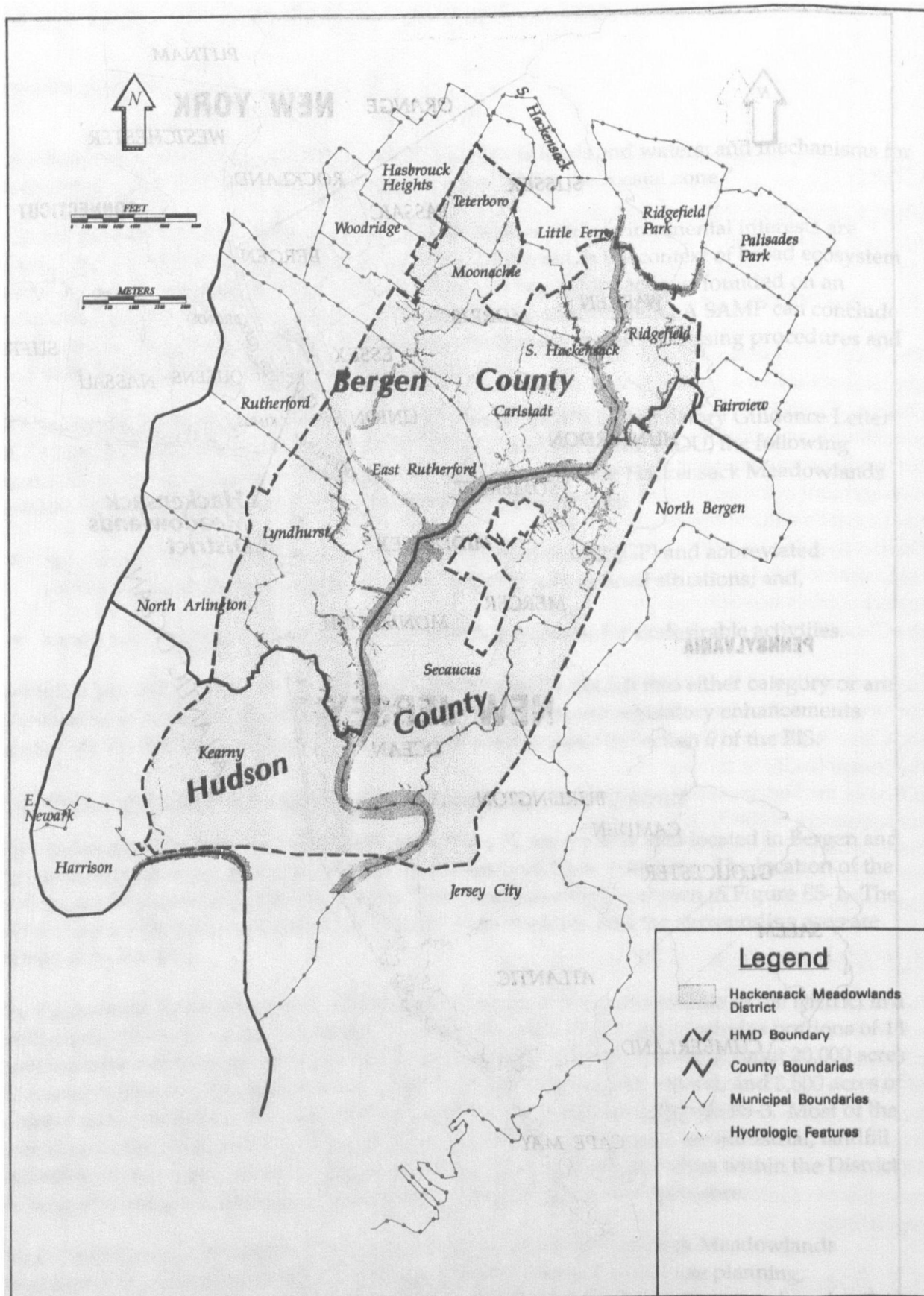
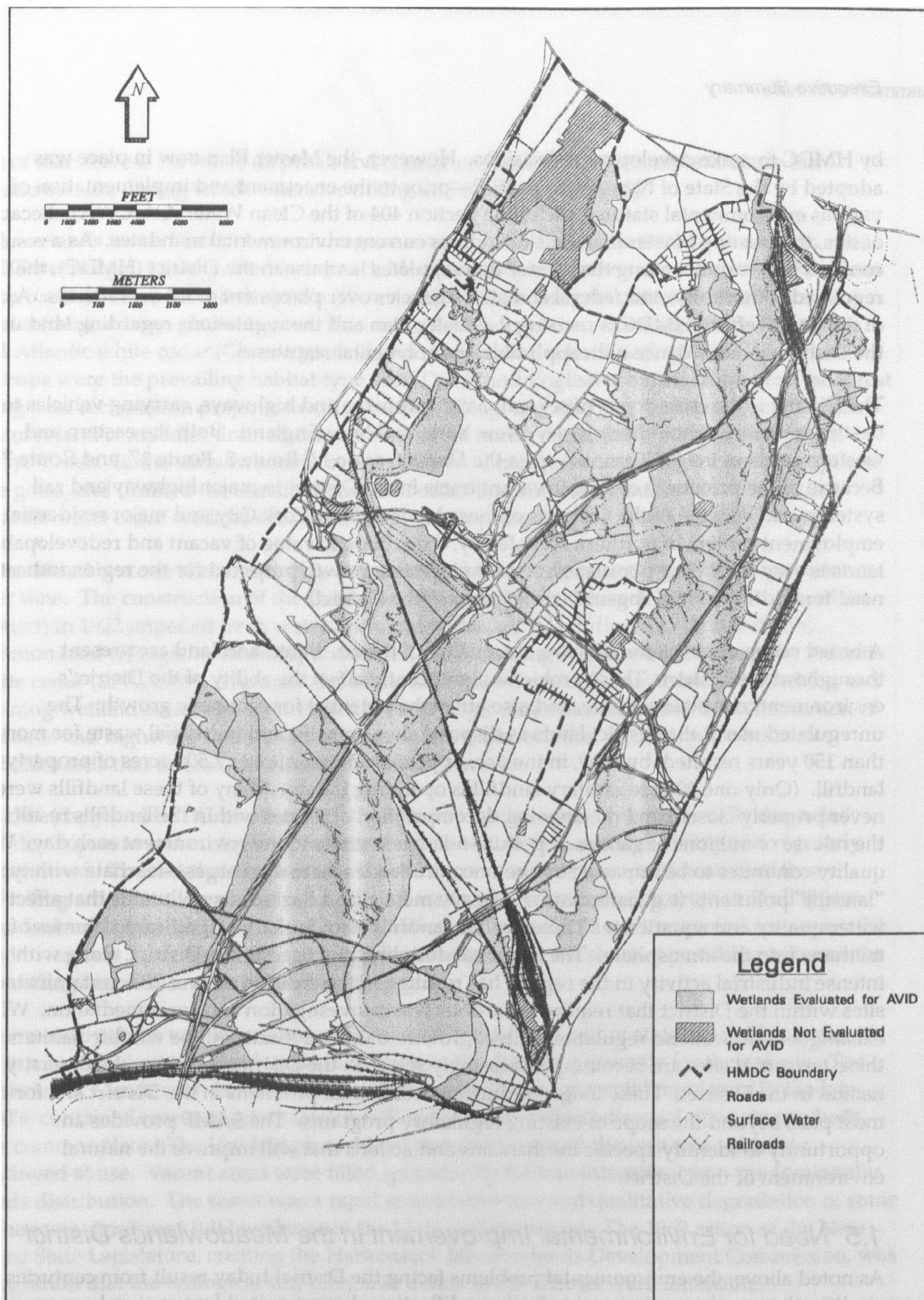


Figure ES-2
Political Boundaries in
Hackensack Meadowlands District



Source: USEPA. Functional Assessment Report. 1989.

Figure ES-3
Wetland Areas

by HMDC to make development decisions. However, the Master Plan now in place was adopted by the State of New Jersey in 1972—prior to the enactment and implementation of various environmental statutes, including Section 404 of the Clean Water Act (CWA). Because of this, the existing Master Plan fails to address current environmental mandates. As a result, conflicts have arisen among the agency that regulates land use in the District (HMDC), the regulated community, and federal and state agencies over placement of fill in wetlands. As part of the SAMP effort, HMDC is revising its Master Plan and the regulations regarding land use in the District, in accordance with applicable environmental statutes.

The District is the cross-roads of several major turnpikes and highways, carrying vehicles to destinations throughout New Jersey, New York, and New England. Both the eastern and western spurs of the NJ Turnpike cross the District, as do NJ Route 3, Route 17, and Route 7. Because of the proximity of sizable vacant tracts in the District to major highway and rail systems, and because of the nearness of these lands to New York City and major residential and employment centers in northern New Jersey, the economic value of vacant and redevelopable lands is very high. The population and employment growth projected for the region indicates a need for additional housing and work spaces in the District.

A broad range of problems affecting the quality of the air, water, and land are present throughout the District. These problems significantly affect the ability of the District's environment to sustain wildlife, and also affect the potential for economic growth. The unregulated use of the District lands as disposal sites for solid and industrial waste for more than 150 years resulted, by 1969, in the use, or proposed use, of over 2,500 acres of property as landfill. (Only one 20-acre sanitary landfill is operating today.) Many of these landfills were never properly closed, and the ongoing decomposition of wastes within the landfills results in the release of millions of gallons of pollution-laden leachate to the environment each day. Water quality continues to be impacted by the uncontrolled leachate discharges—leachate with typical "landfill" pollutants (e.g., ammonia and heavy metals) and hazardous pollutants that affect both water quality and aquatic life. These orphan landfills also discharge significant volumes of methane into the atmosphere. The historical dumping practiced in the District, along with intense industrial activity in the region, has resulted in the creation of over 200 contaminated sites within the District that require hazardous waste investigation and/or remediation. While existing federal wetland regulations direct growth to upland locations, the wildlife habitats in these terrestrial sites are becoming increasingly scarce in the District, reducing the diversity of habitat in the District. These long-standing environmental problems in the District are, for the most part, beyond the scope of existing regulatory programs. The SAMP provides an opportunity to identify specific mechanisms and actions that will improve the natural environment of the District.

1.5 Need for Environmental Improvement in the Meadowlands District

As noted above, the environmental problems facing the District today result from centuries of modifications to the environment. Such modifications have resulted from natural processes (such as sea level rise and sediment erosion and transport), and from man-induced changes (such as the impoundment of the Hackensack River for water supply purposes; a long history of

use of marsh areas for waste disposal; and changes related to early attempts to settle the Meadowlands, during which extensive diking and ditching occurred).

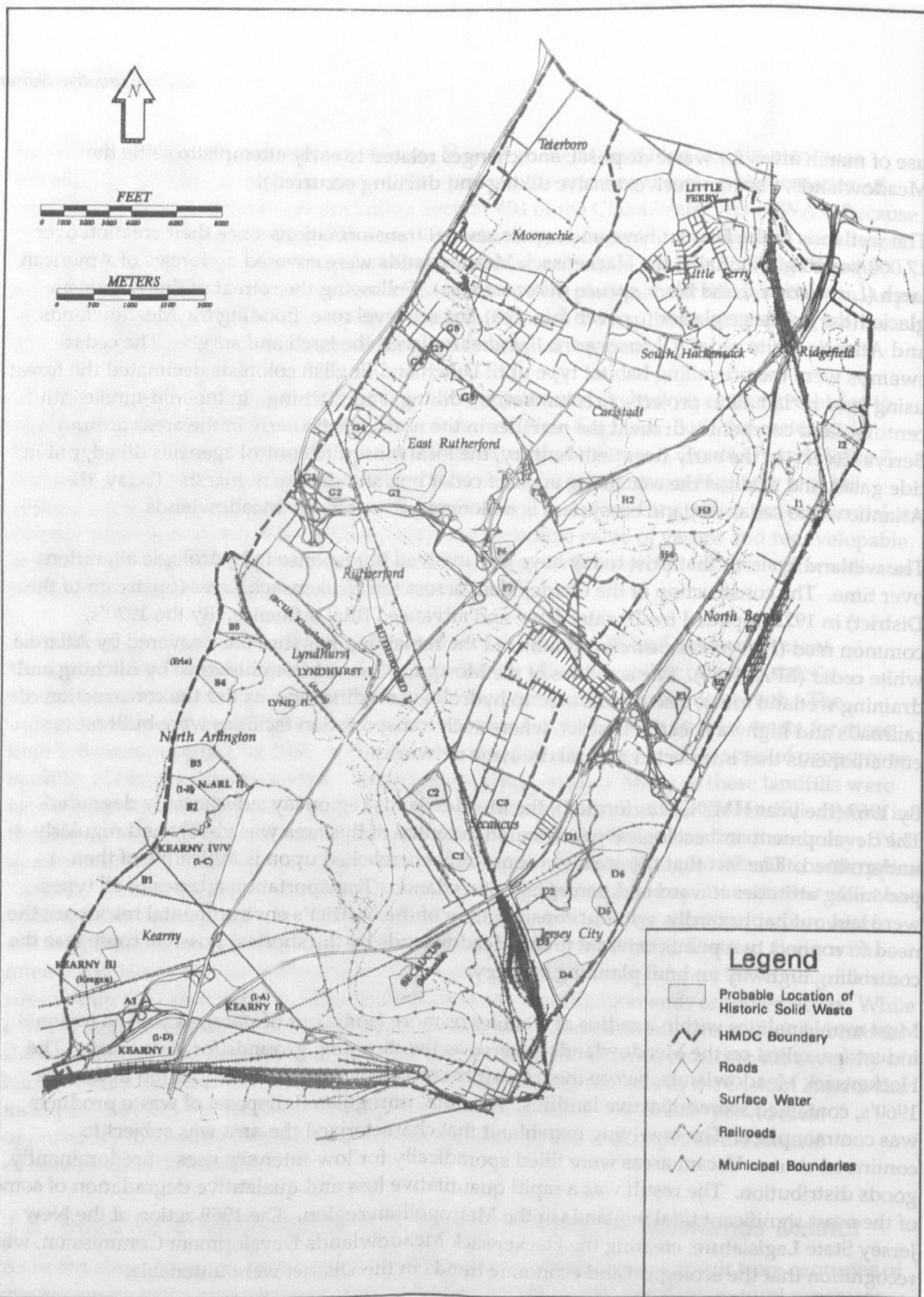
The wetlands in the District have undergone several transformations since their creation over 17,000 years ago. Initially, the Hackensack Meadowlands were covered by forests of American larch (*Larix laricina*) and black spruce (*Picea mariana*). Following the retreat of the Wisconsin glacier (the last large glacier to cover this area), the sea level rose, flooding the Meadowlands, and Atlantic white cedar (*Chaemecyparis thyoides*) replaced the larch and spruce. The cedar swamps were the prevailing habitat type until Dutch and English colonists decimated the forest using land reclamation projects, fire, lumbering, diking, and ditching. In the mid-nineteenth century, land companies drained the marshes in the north, particularly in the areas around Berrys Creek. In the early twentieth century, the local mosquito control agencies diked, put in tide gates, and drained the remaining areas of cedar bog and emergent marsh. Today, the Atlantic white cedar wetland ecosystem is no longer present in the Meadowlands.

The wetland systems that exist today have also evolved in response to hydrologic alterations over time. The construction of the Oradell dam across the Hackensack River (upstream of the District) in 1922 impeded fresh water flow, and advanced tidal influence. By the 1920's, common reed (*Phragmites australis*) dominated the remaining marshes once covered by Atlantic white cedar (EPA, 1989). The activities of the Mosquito Control Commissions, by ditching and draining wetland areas, also contributed to hydrologic modification, as did the construction of railroads and highways in the District, where such transportation facilities were built on embankments that intersected natural drainage networks.

By 1969 (the year HMDC was formed), the Meadowlands region lay substantially degraded. The development and ecological preservation potential of this area was visibly and regularly undermined. The fact that the area was constantly encroached upon is indicative of then-prevailing attitudes toward and perception of wetlands. Transportation arteries of all types were laid out haphazardly, without consideration of the District's environmental resources; the need to connect two points external to the Meadowlands by the shortest possible route was the controlling highway and rail planning strategy.

Most municipalities within a radius of 50 miles or more (some out of state), as well as regional industries, relied on the Meadowlands to serve as the dumping grounds for their waste. The Hackensack Meadowlands, before the intensification of environmental regulation in the late 1960's, contained scores of active landfills. Random, unregulated disposal of waste products was commonplace. The low-lying marshland that characterized the area was subject to continued abuse. Vacant areas were filled sporadically for low-intensity uses—predominantly goods distribution. The result was a rapid quantitative loss and qualitative degradation of some of the most significant tidal wetlands in the Metropolitan region. The 1969 action of the New Jersey State Legislature, creating the Hackensack Meadowlands Development Commission, was recognition that the ecological and economic trends in the District were untenable.

Over the years 1,600 acres of wetlands were filled as a result of sanitary landfilling practices, mostly prior to 1972 (see Figure ES-4). Additionally, 148 acres of wetlands were filled by the New Jersey Sports and Exposition Authority and 92 acres of wetland were filled by the New



Source: HMDC, "Solid Waste Management Plan Report," 1991.

Figure ES-4
Historic Solid Waste
Activities (before 1970)

Jersey Turnpike Authority, both outside the jurisdiction of HMDC. In addition, approximately 525 acres of wetlands have been filled as a result of more recent development activity. All of these fill activities occurred prior to 1985.

Historic industrial and household waste disposal (dumping) activities in the District have caused significant soil and water contamination in the lower Hackensack River Basin. HMDC inventories indicate over 200 waste discharge and disposal sites in need of investigation, remediation, and/or management. The pollution and environmental degradation, together with hydrologic alteration, have compromised the quality of the extensive wetland environments historically present in the District. Environmental losses in the District, for the most part, were brought under control for the first time with the creation of the Hackensack Meadowlands Development Commission in 1969.

Current water quality impacts to both the Hackensack River and adjacent wetlands result from: discharges from five sewage treatment plants with varying levels of treatment; approximately 50 permitted industrial sources; cooling water from three major power plants; non-point source runoff (including runoff from three Superfund sites and six hazardous waste sites); raw sewage and storm water from several combined sewer overflows; and runoff and leachate from over 1,000 acres of (mostly abandoned) landfills which have not been properly closed.

In order to restore and enhance the environment of the District, HMDC, with input from the state and federal SAMP agencies (i.e., EPA, ACE, NOAA, and NJDEP), has developed an Environmental Improvement Program (EIP). The EIP is an integral component of the SAMP and the revised HMDC Master Plan, and would provide a *centrally-managed* approach to environmental remediation and natural resource protection projects throughout the District. The EIP proposes specific environmental objectives and improvements, remediation programs, and enhancements that will have a significantly positive impact not only on the District's environment, but on surrounding regions as well. The components of the EIP include solid waste management, water resource protection, environmental enforcement, air and land quality improvements, natural resource management, and development of park, educational, and recreational opportunities. To accomplish the goal of remediating past environmental impacts and managing a significant urban estuary, the various program elements are best implemented in concert. Each piece is integral, and together they provide a dynamic opportunity for restoration and enhancement of District environments.

The Environmental Improvement Program establishes and implements state-of-the-art management techniques for cleanup and/or prevention of pollution of the air, water, and soil. Coordination of programs affecting all Meadowlands District environments, together with vigorous monitoring and enforcement, is key to the success of the EIP. Environmental research and monitoring provides for the systematic appraisal of the extent of pollution, as well as the information and technical basis for environmental management decisions. Priorities of the EIP will be formally established and revised annually by a SAMP-appointed committee (the EIP Advisory Committee) as tasks are completed, new funding sources are identified, or additional opportunities for environmental improvements arise.

Implementation of the EIP will include the following actions:

- coordinating the implementation of the numerous environmental improvement projects proposed by HMDC, thereby maximizing environmental benefit,
- targeting and collecting funding to pay for District-sponsored environmental improvements,
- developing monitoring programs to measure attainment of SAMP environmental goals,
- inspecting critical environmental resources in the District, preventing degradation (by monitoring and enforcement actions), and identifying parties responsible for impacts, and,
- applying and coordinating existing regulations and laws relating to environmental protection innovatively to increase effectiveness, and to reduce delay and overlap.

However, the substantial cost of environmental remediation has not been within the resources of HMDC, nor is it projected to be under existing funding mechanisms. The total cost of the EIP, implemented over the planning period, has been estimated to be approximately \$900 million. Funding mechanisms are proposed in the SAMP that rely on the enhanced value of projects that are consistent with the SAMP/HMDC Master Plan (see following section).

1.6 Need for Growth in the Meadowlands District

One of HMDC's legislated goals is to "promote orderly, comprehensive economic development" within the District. To fulfill this goal, HMDC has conducted an extensive analysis of the developmental needs of the District. The results of this analysis for residential, office, and commercial components of need are summarized below.

Need for Residential Growth in the Meadowlands District

Sustainable growth is being planned by HMDC to meet basic social needs for housing, employment opportunity, environmental protection, and recreation. Regional growth promotes the principles of enhancing individual welfare, opportunity, and fairness. HMDC has addressed the need for housing from a social perspective—proceeding toward a goal of meeting at least part of the housing need expressed by all income groups.

The growth in the number of households and the growth in jobs projected for the region and District create a *need* for housing, because new workers that are employed in the region, and new households that are formed require a place of residence. To serve this need, opportunities must be made available to add to the housing stock. The need for residential growth is also a function of the need to replace obsolescent housing, and the need to maintain appropriate vacancy rates so that an inventory of available housing stock can be maintained to meet demand.

A six-county region has been identified that generally represents a commuting range between the Meadowlands District and out-of-District jobs and housing, and includes Bergen, Essex, Hudson, Passaic, Union and the northern portion of Middlesex Counties. Analysis of property

tax information prepared by the Center for Urban Policy Research (as part of their work for the Office of State Planning) shows that vacant land acreage in the six county area is scarce. The scarcity of vacant land, considered together with the locational real estate advantages of District properties, helps explain why the Meadowlands District has been under substantial development pressure. Because the Meadowlands District contains a major percentage of the undeveloped land in the surrounding region, and because it is highly accessible, substantial need for regional residential growth will be expressed in the District during the planning period. The goal of HMDC is to provide for a fair share of the regional housing need in the District, a share approximately equal to its substantial percentage of the region's vacant land.

The need for residential growth in the Hackensack Meadowlands District is a function of anticipated employment and household growth in the NJ/NY metropolitan region. Housing need is composed of a need for low and moderate income housing and a need for market rate housing.

Based on the NJ Council on Affordable Housing (COAH) calculations, there is a deficiency in available low and moderate income housing in the Meadowlands District municipalities¹. COAH defines a need for 2,393 low and moderate income housing units within the District municipalities. The market rate housing need for the District, based on provision and subsidization of low and moderate income housing, equals 11,550 *market rate* units.

The analyses conducted for this EIS (see Section 1.3.2.1 of the EIS) indicate a housing need in the Meadowlands District for at least 14,000 residential housing units, based on fulfillment of low/moderate income housing needs and regional need for new housing opportunity. This forecast is based on the need to support low/moderate income housing goals for the area, and the need to host at least the amount of regional population increase proportional to the District's vacant land inventory. Projections based on employment increases and household formation should be considered long-term estimates of need, and transcend economic and real estate market fluctuations.

Need for Office Growth in the Meadowlands District

The need for additional office development in the District is a function of: (1) the need to provide space to accommodate anticipated employment growth, and (2) the need to fund environmental improvements in the District. Public policy articulated in the State Development and Redevelopment Plan directs growth to areas of the state with existing infrastructure, and recommends growth occur in "centers" that feature mixed land uses. Center-based development, found to be the most efficient form of growth in recent HMDC planning studies for the District, reduces dependence on automobiles, thereby reducing related air emissions, and maximizing use of existing infrastructure capacity in developed areas.

¹ Because of the saturated development patterns in the parts of the 14 Meadowlands District municipalities outside the District boundary, the new housing component of low/moderate income housing need and the market rate construction that would be used to finance and subsidize rehabilitation and construction of low/moderate income housing can only be achieved (built) within the District.

Executive Summary

Analysis by the Real Estate Research Corporation (RERC, 1991) indicates a market demand for primary office space development in the Meadowlands District that is 15 percent of the office space demand to be exerted by northern New Jersey. The resulting demand for primary office space in the District during the planning period totals approximately 18 million square feet. Coincident to the demand for primary office space, demand is projected for growth in secondary office, warehousing, and light industry, totaling an additional 15.3 million square feet of space. This demand is based on the need to provide support for primary office activity currently existing and projected for the region, and is also a function of the significant locational advantages of the District for distribution of goods and materials.

Another significant need for non-residential economic development in the District is the need to provide a funding source and system for environmental remediation and natural resource preservation programs in the District, only a small part of which is fundable under existing government programs. (Note: Wetland mitigation performed as compensation for projects that may receive permit approvals in the future is separate from, and not included in, the need for environmental improvement in the District arising from historic environmental degradation.)

In planning for the future of the District, the creation of funding mechanisms to remediate the long-standing and cumulative environmental degradation of the District must be considered. The office growth projected in the District has been identified as one of the major sources of funding for environmental improvements. Based on the anticipated growth that is achievable in the District (in the context of a District Master Plan), existing and new non-residential development is anticipated to yield about \$400 million, in addition to the existing sources of government funding and landfill closure funding, toward the estimated \$900 million in EIP projects. (HMDC has identified additional revenue sources that may be available for EIP implementation, including environmental assessment fees on existing development, in order to attempt to achieve as many of the EIP goals as practicable.)

Need for Commercial Sector Growth in the Meadowlands District

As increases in population, households, and employment occur in the region, and as the needs of area businesses expand, demand is exerted for goods and services to support household, recreational, and economic activities. The need for commercial facilities results from these growth-related demand factors, and from the need to integrate commercial activity with other growth, in fulfillment of HMDC's Master Plan policy of mixed use centers. Regional, community, and neighborhood commercial centers are essential components of economic and population growth within a region.

The total projected demand for 2.5 million square feet of regional commercial space in the District is based on the following components: (1) the unfulfilled commercial needs of the existing regional population, (2) the needs of the existing (1990) in-District employment base of 72,000, (3) the needs of the projected primary and secondary employment increase of 100,000 workers, and (4) the needs of a projected increase of 40,000 new residents in the District.

Summary of Growth Needs in the District

The needs for growth in the District are summarized in Table ES-1, below. The need for growth is based on analyses conducted by HMDC for the EIS, as discussed in the preceding sections. These needs are used in the evaluation of the SAMP land management plan alternatives discussed in the following section. However, it should be noted that these needs are approximate, and are “generally” met by the alternatives—the amount of growth included in each alternative may not exactly match the numbers presented in Table ES-1.

TABLE ES-1
HMDC DEVELOPMENT NEEDS

DEVELOPMENT TYPE	NEED
Residential	14,000 units
Primary Office	18 million square feet
Secondary Office	6.3 million square feet
Warehouse/Distribution	9 million square feet
Commercial	2.5 million square feet

1.7 Need for Transportation System Improvements

The existing transportation system was started in the early 1900's and was built largely to traverse, but not necessarily to service, the District. This system has not kept pace with growth, in the region or the District. Today, traffic exceeds the capacity of many roadways and impedes bus transit.

Seven commuter rail lines traverse the District, including New Jersey Transit routes and Amtrak's Northeast Corridor line, yet there are only three rail stations in the District, two of which are serviced by one limited line. Direct rail access from central and southern New Jersey is non-existent. Direct access by Amtrak or PATH service is also not provided. Bus lines cross the District, the majority traveling on major state highways to destinations in New York City. Local bus service is often limited and time-consuming.

As noted above, the road network capacity of the District mainly serves traffic with origins and destinations outside the District. A significant percentage is destined to New York City and Hudson County in the morning, and to western suburbs in the evening. Arterial roads to the District approach capacity daily. A 1976 survey of morning rush hour traffic indicated virtually every Interstate and State road in the area was at or was marginally close to capacity. Traffic continues to increase 1% to 2% each year, and highway capacity is often exceeded on Routes 3, 1&9, and I-495.

Executive Summary

Efforts by transportation planners to address the problems of congestion have, in the past, usually taken a road-by-road approach to capacity improvement. Only in the last decade have important attempts at comprehensive transportation planning taken place. In the late 1980's HMDC initiated a comprehensive analysis of the District's transportation system, culminating in the preparation of the 1989 Transportation Plan Element, which is a component of the HMDC Master Plan revision process. This effort produced a set of highway and transit improvement proposals that are inter-related and interdependent, and that are consistent with regional growth trends and land use and transportation policies. Given the past trends of traffic increases in the District, and the effects of future growth that is projected in the region, there is a need for a range of transportation system improvements in the District, including:

- Expansion of mass transit systems (including both rail and bus service);
- Improvement to the regional highway system;
- Construction of new arterial and collector roads to improve intra-District travel; and,
- Widening and reconfiguring segments of existing intra-District arterial and collector roadways.

Chapter 2

Analysis of Alternatives

The analysis of alternatives as part of the EIS for the SAMP derives from the need to examine reasonable alternatives to the proposed action (including the no action alternative and alternatives not within the jurisdiction of the lead agency), as described in the Council on Environmental Quality (CEQ) Regulations on Implementing the National Environmental Policy Act (NEPA)². In addition, the SAMP MOU specifically provides for the consideration of out-of-District alternatives in the EIS.

The alternatives analysis addresses three *groups* of alternatives that must be assessed to understand possible alternatives to the SAMP. Each group of alternatives consists of a number of specific alternatives that have been analyzed.

1. ***Out-of-District alternatives.*** This analysis evaluates the degree to which alternative locations—presumed to have lesser environmental impacts—outside the District boundaries may be available that would accommodate the growth anticipated in the District, and allow achievement of SAMP goals. The potential to redirect market forces for development that are present in the District to out-of-District upland locations in a six-county metropolitan region is assessed.
2. ***In-District alternatives.*** This analysis assesses the comparative environmental effects of five representative land management scenarios within the District, and a no action scenario, and concludes with the creation of a hybrid alternative for growth and environmental management. The hybrid alternative combines growth elements from the five representative land management scenarios (so as to minimize impacts to wetlands and aquatic resources), and includes transportation improvements in the District. The No Action alternative is also defined and reviewed. The No Action alternative is defined as a “No SAMP” alternative. In other words, if a SAMP and new Master Plan are not implemented for the District, the growth pressures and patterns traditionally present in the District are projected to continue, per the zoning created under the 1970 District Master Plan.
3. ***Environmental Improvement Program (EIP) alternatives.*** The EIP is a key element of the SAMP, and provides (1) for the coordination of environmental remediation and enhancement actions in the District, and (2) for the implementation of a full range of specific environmental improvements. Alternatives to the EIP are considered, specifically (a) no action, and (b) partial implementation.

The alternatives analysis will allow projects that are consistent with the SAMP to be eligible for streamlined permitting processes, in part because alternatives for projects consistent with the SAMP will have been addressed by the analysis conducted for the SAMP/EIS.

² CEQ Regulations on Implementing NEPA (40 CFR (Code of Federal Regulations) 1500-1508)

Executive Summary

The availability of alternative sites, both within and outside the District, was best evaluated, given the programmatic nature of the EIS, by assessing representative locations that exhibit high potential to function as alternative locations for growth. Sites have been selected for review that are representative of the forms of growth and the scale of growth anticipated to occur in the District, and that address project needs.

A central principle of the Section 404(b)(1) Guidelines is that:

“No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.”

Note, however, that non-aquatic environmental impacts are also taken into account. If an alternative that is less damaging to the aquatic ecosystem would have other significant adverse environmental consequences, then the Section 404 discharge may be allowed despite the existence of a practicable alternative. (This issue is discussed in detail in Appendix S of the EIS.) These other significant adverse environmental consequences of alternatives are of particular importance in the Meadowlands, because of the need to repair the extensive damage to the natural environment that has occurred in the District as a result of historical land use and waste disposal practices, and the need to implement environmental controls to reduce discharges of pollutants (such as landfill leachate) to the District’s waters from historical waste disposal practices.

The pollution and environmental degradation, together with the hydrologic alteration, have compromised the quality of the extensive wetland environments present in the District. More importantly, many of these sources of pollution will continue to degrade the aquatic ecosystem, aquatic food web, and possibly human health if they remain unaddressed. Substantial environmental improvements are proposed in the Environmental Improvement Program to offset the significant pollution, environmental degradation, and hydrologic alteration that has resulted from past land use practices. Consequently, any alternative that does not include mechanisms to implement these components of the EIP would not meet the environmental needs of the District, and would result in continued, cumulative degradation to the District.

Inability to implement the EIP would result in net environmental loss, because leachate and pollutants will continue to contaminate the District’s wetlands and waterways, as well as the air, soils, and wildlife. Consequently, alternatives that do not allow implementation of these critical components of the EIP, or alternatives that reduce EIP funding for these components are likely to have other significant adverse environmental consequences in the District, resulting in greater impacts than actions proposed under the SAMP.

2.1 Out-of-District Alternatives Analysis

Methodologies for analysis of out-of-District alternatives have been applied that are appropriate at the regional scale, and that are appropriate for supporting “program-level” decisions, in this case involving selection of land management plans, environmental management plans, and

regulatory enhancements for the District that best meet the goals of the SAMP and the MOU. (For more information on the out-of-District Alternatives Analysis, see Section 4.2 in the SAMP/EIS.) The out-of-District alternatives analysis is conceptually equivalent to a “no build” alternative for the District, because meeting social, economic, and environmental needs outside the District would supplant the need for such activities in the District. Toward that end, the following criteria have been applied in selecting locations for review:

- Out-of-District locations selected for review should be representative of opportunities that conform with good planning and resource protection principles,
- Out-of-District locations preferred and selected for review are sites that can achieve planning objectives outlined in the New Jersey Development and Redevelopment Plan,
- Out-of-District sites should generally have the ability to fulfill goals for environmental improvement, economic development, and to meet social needs—equivalent to the goals and needs identified by HMDC.

The approach used in the evaluation of out-of-District alternatives consists of the following major steps:

- Identify potential out-of-District locations in the project alternatives study area—defined as a six-county metropolitan area in northern New Jersey, to include Union, Essex, Hudson, Bergen, Passaic, and northern Middlesex County. The out-of-District locations considered were sites that could accommodate projects of scale, function, and density similar to HMDC’s Planning Areas, to evaluate achievement of comparable project purposes at alternative locations.
- The analysis of out-of-District alternatives focuses on sites outside the District that are comparable to those in the HMDC-identified Planning Areas, because (1) many small parcels of land are theoretically available in the six-county out-of-District study region and preparing individual reviews of each small parcel is inefficient, and because (2) the EIS is programmatic (regional) in nature. Representative out-of-District locations were selected for additional consideration based on a site’s potential to accommodate growth, its ability to accommodate projects of comparable scale, and the general availability of infrastructure and transportation/transit systems.
- The criteria used to select representative out-of-District sites for analysis reflect the concepts advanced in the State Plan, which are intended to steer New Jersey toward less sprawling forms of development. The State Plan advocates that growth be directed to “centers” that have high levels of accessibility, provide a diversity of land uses and varying intensities of land use, enhance the efficient delivery of public services, and contribute to a perceived sense of place. In this analysis, preference is given to sites that share with in-District locations the ability to accommodate both housing and employment (i.e., mixed uses), providing adequate and affordable housing sufficiently adjacent to places of employment to minimize travel needs.

Executive Summary

- Accordingly, sites are preferred that offer the potential for achieving synergistic effects in meeting a range of needs. Mixed-use development can provide for economic activity, delivery of public services, living space, and environmental protection, all in a coordinated way that encourages interaction and mutual support among all these facets of the community. Such synergism is necessary for the built environment to achieve what the state plan calls “communities of place”—that is, communities that are dynamic, diverse, compact, and efficient.
- The feasibility of meeting SAMP goals and regulatory requirements using locations outside the District was then assessed, and an out-of-District alternative was proposed to test the rate at which some in-District growth might be redirected to an out-of-District location. Because of HMDC’s clearly stated support for revitalizing New Jersey’s urban centers, and because of HMDC’s support for the NJ Development and Redevelopment Plan (which promotes growth in urban centers), HMDC proposes a pilot program to assess the potential for redirection of growth to an urban center(s). The potential for redirecting some of the growth pressure focused on the Meadowlands District to out-of-District urban locations will be assessed as part of the SAMP by implementing a pilot program. Such a program will yield valuable information, insofar as little applicable data is currently available to assess the effectiveness of various initiatives in encouraging such redirection. However, efforts to redirect growth out-of-District will be implemented only to the degree that they do not result in HMDC substantially forfeiting achievement of District and SAMP environmental management goals.

The preliminary screening of potential out-of-District alternative sites reveals that within the closer-in areas of the SAMP region, cities such as Jersey City, Newark, and Elizabeth appear to offer space for growth and also have the potential to promote the urban redevelopment goals of the NJ Development and Redevelopment Plan. Given past losses of population and business, these cities have land available for redevelopment. They actively seek creative forms of development, which the suburbs generally do not. This is because urban centers, such as Jersey City and Newark, have more flexible land use regulations that permit development with the desired diversity of use and density. Also, because the major rail lines were built to serve the cities, growth in these locations offers the greatest potential for shifting the balance in northern New Jersey toward more public transportation and less private automobile use. These cities are also focal points of the regional highway network; although connector routes may be congested. During the preliminary site screening a number of potential locations in Jersey City, Newark, Elizabeth, and Paterson were reviewed, as discussed below.

The suburban areas, in contrast, are likely to continue to apply restrictive land use controls that segregate land uses and discourage the SAMP objective of combining residential, office, and commercial growth at any one location. The older suburban towns seek to maintain their suburban character, and generally discourage further urbanization. The suburban areas generally have not suffered industrial and population losses, and so do not have the sites available for redevelopment that the larger cities have. Nor do large tracts of virgin land remain, as exist in exurban areas. While the region could probably physically accommodate much of the projected demand for growth without using the Meadowlands sites, it could only do so in fragments, scattered over many unrelated sites in the metropolitan region. Such scattered

growth would increase the undesirable patterns of segregated land uses and sprawling development that erode the strength of established cities, place unnecessary burdens on public services, and lead to the loss of scarce natural areas in suburban locations. In addition, the service infrastructure of many suburban areas does not have sufficient surplus capacity to accommodate major new development without significant public investment.

From the sites/locations reviewed in the preliminary screening, four sites were selected for additional analysis. They are (1) Hudson Exchange in Jersey City, (2) a cluster of sites in Newark, (3) the Toombs site in Wayne, and (4) the Ramapo Ridge and International Crossroads sites in Mahwah. These sites/locations were selected because they best met the previously established screening criteria: mixed uses are permitted; each could accommodate growth of a general scale that is comparable to in-District sites; each is located in a potential regional center, and each offers potential for synergistic effects in meeting diverse social and economic needs.

A preliminary evaluation of potential environmental impact was conducted for the four sites/locations, at a programmatic level-of-analysis, and their ability to fulfill growth needs and achieve project purpose was evaluated.

Ability of Out-of-District Alternatives to Fulfill Growth Needs

This analysis considers the real estate market to be a significant factor in determining the ability of various locations to fulfill the housing, office development, commercial, and warehousing needs of the region. Market demand strongly influences decisions to construct new housing and places of commerce and employment. Criteria that guide development decisions typically include "hard" factors such as land cost, construction cost, and infrastructure availability, and "soft" factors such as marketability and location.

The out-of-District alternatives analysis concluded that differing market forces in urban, suburban, and Meadowlands intra-regional areas result in land use preferences which generally do not compete among these areas. These differences in market forces are not expected to change during the 20-year planning period. As a result, the growth projected for, and needed in, the District cannot be effectively relocated out of the District, as discussed below. Real estate professionals in the region anticipate that if the proposed growth in the SAMP is not accommodated in the District, the development will be lost to the region. If this occurs, the region's housing and employment needs will not be met.

Although locations have been identified out of the District that would accommodate single use needs, such as development of homes or office buildings, growth dispersed throughout suburban locations (such as Mahwah and Wayne) would contribute to the pattern of sprawl that is discouraged in the adopted NJ State Development and Redevelopment Plan. Development of the Ramapo Ridge sites in Mahwah will result in loss of forested upland in the NJ Highlands, with the attendant loss of wildlife habitat, open space, and increased segregation of residential and non-residential land uses (requiring additional dependence on automobile travel), in an area that serves as an important source of water supply for major population centers in northern New Jersey. The Wayne site has greater potential for mixed use development, however, as is the case for many large tracts that have remained undeveloped through the years, the site has

Executive Summary

significant wetland acreage that hinders implementation of a large mixed use project, and thus is not superior to in-District sites.

Growth in urban locations is consistent with the State Master Plan. However, the nature of the housing and office market was found to be substantially different than the market existing in the Meadowlands District, and urban centers were not found to be alternative locations for most of the forms of growth that are exhibited in the Meadowlands District.

In conclusion, neither vacant suburban nor urban locations appear to serve as practicable alternatives to growth in the Meadowlands District. The market demand for (and related development funding in) out-of-District urban locations is not sufficient to fulfill the regional need for housing and employment facilities. If market forces proposing growth in the District are not accommodated, and out-of-District locations do not adequately substitute for in-District proposals, developers will look elsewhere for investment opportunities to replace those not secured in-District. Such a scenario is likely to result in loss of population and jobs to the region. There is significant competition for investment dollars throughout the U.S., witness the business captures in the Sunbelt in the past decade. Investors that cannot find desirable business locations have been readily induced to consider new locations outside the metropolitan area.

Ability of Out-of-District Alternatives to Achieve Project Purpose

The approach to SAMP implementation agreed upon in the MOU, and proposed by HMDC for future District planning, is based on the interdependency between future land uses and environmental restoration, and linkage between future land uses and achievement of environmental management goals and social needs (i.e., housing and employment opportunity). In order to manage the complex land use and environmental issues in the District the following mechanisms need to be synthesized:

- zoning that accommodates reasonable economic growth in the District, in the form of mixed development centers with strong linkages to surrounding business services;
- financing environmental rehabilitation, environmental management, and monitoring systems in the District using environmental linkage fees and environmental assessment fees from new and existing development;
- convergence of federal, state, and local public policy objectives with regard to the environment, transportation, housing, and economic development;
- creation of a federal/state partnership that can efficiently and comprehensively address the "bundle" of problems and needs in the District.

Achieving the goals of the SAMP, in particular the EIP, is fundamentally dependent upon implementing SAMP mechanisms that are integrally linked, so as to achieve *comprehensive* District-wide planning and environmental management goals. The cost and regulatory complexity of realizing land and environmental management goals are significant for the District. Directing growth out of the District, to urban or suburban locations elsewhere in metropolitan New Jersey, cannot contribute to the project purpose of implementing a SAMP

with an effective EIP, because it would make the implementation tools that are essential for environmental improvement (such as environmental assessment fees and linkage fees, transfer of development rights (TDR), and mitigation/restoration projects) unavailable to HMDC. Hence, the integrity and effectiveness of the SAMP in achieving environmental and economic goals would be undermined by shifting a majority of the anticipated economic development out of the District. Out-of-District growth, to the degree that it substantially detracts from in-District growth needs and environmental improvement goals, is inconsistent with HMDC's planning objectives and environmental goals.

2.2 In-District Alternatives Analysis

Screening Analysis of In-District Alternatives

The in-District alternatives screening can be described as an environmental analysis that compares the relative efficiency of land use and resource protection associated with a series of alternative spatial arrangements for future growth in the District. The alternatives to be screened consist of five in-District land management alternatives, as well as the no action alternative. The alternatives that have been developed are representative of spatial arrangements associated with typical growth patterns in the NY Metropolitan region.

The in-District alternatives that have been evaluated include:

No Action Alternative

In-District Land Management Alternatives

- Upland Growth
- Redevelopment
- Highway Corridors
- Dispersed Development Areas
- Growth Centers

The in-District alternatives analysis was conducted in several steps. Before a preferred alternative could be identified for the District, it was first necessary to determine whether there were spatial arrangements for growth in the District that had higher land use efficiencies, identify such spatial arrangements, and then evaluate the environmental effects only for those forms of growth that best meet the objectives of the SAMP.

This section of the alternatives analysis consists of an alternatives *screening* process to evaluate, on a relative basis, the general environmental effects of alternative in-District forms of growth.

The in-District alternatives were developed by HMDC based on local knowledge of the District's growth patterns, land use trends, and environmental resources. Potential development areas were delineated for each of the alternatives, following the definition of that alternative (as is described below). The spatial arrangements were composed using three criteria: reasonableness of the projected land use; degree of representativeness of forms (or spatial arrangements) of growth that typically occur in the region; and the feasibility and appropriateness of identified

Executive Summary

land uses and locations. For example, potential development areas for the Highway Corridors alternative are primarily located along major transportation routes.

For planning purposes, the potential development areas have been divided into two groups: Planning Areas and Satellite Areas. Planning Areas are locations that are anticipated to host the principal land uses (primary office, commercial, and residential development). Satellite Areas are tracts that are anticipated to host secondary land uses (secondary office, warehousing/distribution, and light industrial development), and are typically parcels in proximity to Planning Areas. The secondary office/warehouse land use category provides much of the support service for the primary uses, but also provides for the storage, distribution, and assembly of a wide variety of goods both manufactured and imported into the region. Secondary office uses provide the administrative function for the distribution network and in most cases, are located within close proximity to the distribution/assembly functions.

The in-District alternatives were screened to reveal the comparative land use efficiency and the environmental effects of their spatial arrangements and planning concepts. Thus, all the alternatives have been developed so that, to the maximum extent feasible, they similarly fulfill HMDC-identified social, economic, and environmental needs.

The alternatives screening is designed to reveal the more efficient ways to spatially arrange growth in the District, applying a common and relatively equal set of assumptions. The screening process produces a ranking of alternatives. The rank of each alternative is determined by its environmental impacts and its relative environmental efficiency regarding land use. It should be noted that the impact assessment methodologies were selected and applied at a screening level-of-analysis, designed primarily to reveal differences among alternatives. The impacts of the six in-District alternatives are based on preliminary assumptions regarding land disturbance associated with each alternative form of growth. (The impacts from transportation improvements are held constant during the alternatives screening, because the major improvements vary little from alternative to alternative.)

Description of Land Management Alternatives

No Action Alternative. The No Action Alternative, by definition, does not result in the creation and implementation of a Special Area Management Plan (SAMP) for the District, as defined in the Memorandum of Understanding. The central assumption is that the existing HMDC Master Plan and Zoning ordinance would continue to be implemented.

Upland Growth Alternative. This alternative assumes that growth occurs only on vacant land in the District that is not wetland. This alternative results in the development of most of the natural terrestrial habitats currently existing in the District. In order place the identified development entirely in the limited upland areas, extremely high development densities (e.g., housing densities of 100 units/acre, floor area ratios of about 5.0) were used. These development densities are higher than prevailing geological conditions and Federal Aviation Administration (FAA) height restrictions allow.

Redevelopment Alternative. Redevelopment locations included in this alternative are generally consistent with standard blight criteria of under-utilization and deteriorating conditions. The redevelopment sites shown under this alternative involve redevelopment and conversion of lots on which existing or remnant structures are present into residential, office, commercial or warehousing uses. As with the Upland Alternative, in order to fulfill the identified growth needs for the District, the development densities (i.e., units per acre and floor area ratios) used for the Redevelopment Alternative were higher than prevailing geological conditions and FAA height restrictions allow.

Highway Corridor Alternative. This alternative has been developed based on the assumption that private market real estate pressures will result in growth along existing highway corridors, specifically the high-visibility highly-traveled Route 3 corridor. This form of growth is typical in the NY/NJ Metropolitan region, as development interests are attracted to highway corridors.

Dispersed Development Areas. The Dispersed Development Areas alternative assumes that a pattern of functionally unrelated and decentralized growth is likely to result from market pressures and demand; growth being located in small areas of development scattered throughout the District.

Growth Centers Alternative. The Growth Centers Alternative involves growth occurring principally in major nodes within the Meadowlands District. This alternative emphasizes large scale mixed-use community designs that seek to integrate housing, employment, and retail activity in common locations.

Alternatives were compared and ranked, based on their relative potential environmental impacts in eight categories:

- Wetland Resources
- Threatened/Endangered Species and Remnant/Unique Habitats
- Water Quality
- Aquatic Resources
- Terrestrial Resources
- Transportation
- Air Quality
- Cultural Resources

For each category of potential impact, a numerical measure of impact has been determined. The ranks are indicators of how the potential impacts of each alternative compare to the minimum and maximum impacts that would be exhibited by the alternatives. To evaluate the in-District alternatives, *at a screening level*, the relative ranks for the eight environmental impact categories listed above were combined into a single index to identify the alternatives that exhibited lower overall potential environmental impact. Ranking was performed to facilitate environmental screening of the alternatives.

The in-District Alternatives rank as follows, from lowest to greatest composite impact (the composite impact includes the eight environmental impact categories listed above). Please note

Executive Summary

that this analysis is *comparative*, and the ranks are reported on a scale from 1.0 to 7.0 (because there are seven alternatives including the Preferred Alternative). These impacts are relative impacts, not absolute impacts.

Redevelopment (1.0)—lowest composite impact
Upland (2.0)
Growth Centers (2.3)
Dispersed Development (3.2)
Highway Corridors (4.2)
No Action (7.0)—greatest composite impact

2.3 Hybrid Alternative Analysis

The Alternatives Screening Analysis indicated that the Upland, Redevelopment, and Growth Centers alternatives exhibited the lowest environmental impacts among the in-District Alternatives. Thus, on a comparative basis, land uses in the parcels that composed these three alternatives resulted in lower levels of environmental impact. However, the screening analysis did not result in the identification of an alternative that met the needs and land use objectives of the SAMP. Two of the lowest impact Land Management Alternatives—Upland Growth and Redevelopment—included development densities that were extremely high. High densities were necessary because available land was scarce under the Upland Growth and Redevelopment alternatives.

Such densities are not implementable, for several reasons. A realistic plan for the District needs to reflect current and historical development densities in the District, and recognize the low market acceptability of extremely high densities. (Very high housing densities of over 100 dwelling units per acre, and high floor area ratios of 1.0 to 5.0 were utilized in the Upland Growth and Redevelopment Alternatives because of the scarcity of qualifying parcels.) The northern half of the District is in the flight approach radius of Teterboro airport, and is subject to FAA building height restrictions, which limits density. Finally, in most of the District the geology of the Meadowlands precludes the establishment of buildings of any significant height, because there is inadequate bedrock foundation for tall buildings. Given these logistical constraints, the Upland Growth and Redevelopment Alternatives cannot accommodate the stated growth needs.

Although the other lower impact alternative—the Growth Centers alternative—is able to meet the District's growth needs at practicable densities, it would still involve the discharge of fill into wetlands within the District, while leaving some upland and redevelopment (i.e., non-wetland) parcels unused. These vacant upland/redevelopment parcels, which are not proposed for development as part of this alternative, could be used to fulfill a portion of the District's growth needs, and thus avoid some of the discharges into special aquatic sites that are proposed as part of the Growth Centers alternative (per the 404(b)(1) Guidelines). Maximizing the inclusion of vacant upland parcels, along with all non-wetland redevelopment parcels that are practicable, would have less adverse impact on the aquatic ecosystem.

It was also observed that some land parcels from other higher-impact Land Management Alternatives (that were not included in the Upland, Redevelopment, and Growth Centers alternatives) exhibited potential to further reduce the impacts of growth.

For these reasons each of the parcels in each of the Land Management Alternatives was re-examined as part of a Hybrid Analysis (essentially a second round of alternatives analysis), and another alternative was identified that was a hybrid of the sites from various Land Management Alternatives. This "hybrid alternative" is the basis for the Preferred Alternative. While the Hybrid Analysis derives principally from the Growth Centers alternative, its creation also involved maximizing use of non-wetland sites (i.e., vacant upland parcels, and non-wetland redevelopment parcels) in keeping with the 404(b)(1) Guidelines, and evaluation of parcels from other Alternatives that exhibited potential to reduce overall environmental impact.

The principal objective of the Hybrid Analysis was to meet economic and social needs, and fulfill comprehensive planning objectives for the District, by consolidating selected Planning Areas from the several Land Management Alternatives, while concurrently addressing the Clean Water Act Section 404(b)(1) Guidelines. Thus, a guiding factor in conducting this rigorous analysis was to avoid the use of wetlands to the greatest extent possible in meeting the growth and development needs of the District. This planning analysis establishes and applies criteria intended to address the cost, logistics, and technology parameters of the Clean Water Act Section 404(b)(1) Guidelines. This may include using selected parcels in each of the alternatives in order to make any necessary adjustments that can ensure a balanced distribution of needs. The Hybrid Analysis formed the basis for determining which Planning Areas would be components of the Preferred Alternative.

Through this analysis, the suitability of Planning Areas to comprise the principal land use classifications has been determined, in the context of preparing a comprehensive plan for the District. This determination was based on the application of exclusionary and limiting planning criteria, as described below. The Hybrid Analysis applies each of the exclusionary and limiting planning criteria to the Planning and Satellite Areas, by Land Management Alternative, to determine the suitability of the Planning or Satellite Area to be included in the Hybrid Plan.

A hierarchy of three levels (tiers) of planning criteria were applied to each Planning and Satellite Area site. Assessing a site against the criteria in the first tier generally indicates whether a Planning Area should be excluded from consideration as part of the Hybrid Alternative. The second and third tiers generally indicate that a site has limited potential to achieve HMDC Master Plan goals for Planning Areas, and should be excluded, or its use is limited, as a Planning Area (although the site may be appropriate as a Satellite Area). The exclusionary and limiting criteria are summarized below.

Tier I - Exclusionary Criteria are factors or circumstances which are of such significance that they would eliminate the Planning Area from any further consideration (as a Planning

Executive Summary

Area, Satellite Area, or other use). Specifically, Tier I Criteria relate to site availability, contamination, and ownership or jurisdictional issues.³

Tier II - Potential Cost, Logistics, and Technology Exclusionary Criteria are factors, that when present, can eliminate a Planning Area from further consideration, can change the proposed land use, or can alter the proposed use to that of a Satellite Area. Tier II criteria also are intended to address Section 404(b)(1) Guidelines with regard to activities in wetlands.

Tier III - Limiting Planning Criteria demonstrate the ability of the Planning Area to be responsive to comprehensive planning principles and HMDC developmental needs. If present, the Tier III Criteria indicate limited potential for a Planning Area to achieve Master Plan goals. Tier III criteria also help to define the specific land use types—either primary (primary office, residential, or commercial) or secondary (secondary office, light industry, or warehousing)—to be implemented in the Planning Area.

Based on the hybrid planning analysis, recommendations were made about the feasibility of including each potential Planning and Satellite Area in the Hybrid Plan, keeping in mind the comprehensive planning principles that are used by HMDC to guide future growth. Individual Planning and Satellite Areas were assessed to determine if they met Tier I, II, or III of the exclusionary and limiting planning criteria. If a site was determined to be not suitable as a Planning Area, a similar analysis was used to determine whether it would be suitable as a Satellite Area.

Contaminated lands and Superfund sites have been extensively reviewed. Where remediation plans exist that may allow the site to become available within the 20-year planning period, the site has been included in the Hybrid Plan. However, many of the known hazardous waste sites (where no public program for remediation exists), were eliminated based on costs, logistics, and technology constraints that make their reuse impractical.

The total development potential of these Planning Areas generally meets the growth objectives and social needs identified by HMDC. The hybrid plan has a total of 14 Planning Areas and 38 Satellite Areas.

The land acreage required by the Planning Areas for full implementation of the Hybrid Alternative (over the 20-year planning period) totals 931 acres, of which 499 acres are considered to be wetlands. The Hybrid land use projections based on this Planning Area acreage total 17.8 million square feet of office space, 2.7 million square feet of commercial space, and 13,920 residential units. Table ES-2 identifies each Planning Area selected for the Hybrid Alternative and provides information about the type and amount of growth assigned to each of the Areas.

The land area for Satellite Area development totals 758 acres, of which 251 acres are considered to be wetlands. The Hybrid land use projections based on this Satellite Area acreage total 15.1

³ Tier I and Tier II criteria were developed to address the Costs, Logistics, and Technology parameters of the Clean Water Act Section 404(b)(1) Guidelines.

Table ES-2

PLANNING AREAS

Area	Location	Acreage	FAR/ Density *	Office (sq. ft.)	Commercial (sq. ft.)	Residential (dwelling units)	Wetland Fill (acres)
HYBRID 1	Carls/E. Ruth	40.0	0.50		871,200		2.3
HYBRID 2	Secaucus	7.0	15.00			105	
HYBRID 3	Carlstadt	96.0	40.00			3,840	95.0
		70.0	20.00			1,400	70.0
HYBRID 4	Carlstadt	92.0	0.75	3,005,640			87.6
		32.0	1.00		1,393,920		32.0
HYBRID 5	Carls/E. Ruth	14.0	15.00			210	5.0
		10.0	40.00			400	10.0
		7.0	15.00			105	
HYBRID 6	E. Ruth	12.0	1.00	522,720			
HYBRID 7	E. Ruth	115.0	0.75	3,757,050			72.7
HYBRID 8	Rutherford	0.0	40.00			0	0.0
HYBRID 9	E. Ruth	15.0	1.00	653,400			0.0
HYBRID 10	Secaucus	10.0	1.00	435,600			
		65.0	31.00			2,015	65.1
HYBRID 11	Secaucus	30.0	0.75	980,100			
		20.0	0.50		435,600		
		30.0	0.75	980,100			
HYBRID 12	North Bergen	50.0	0.75	1,633,500			49.7
HYBRID 13	Secaucus	20.0	5.40	4,704,480			9.1
		33.0	0.75	1,078,110			
HYBRID 14	Secaucus	15.0	15.00			225	
		15.0	20.00			300	
		122.0	40.00			4,880	
HYBRID 15	Jersey City	11.0	40.00			440	
PLANNING AREA SUBTOTAL		931.0	AC.	17,750,700	2,700,720	13,920	498.5 AC.
SATELLITE AREA SUBTOTAL		757.9	AC.	See Table ES-3			251.3 AC.
PLANNING AND SATELLITE TOTAL		1688.9	AC.				749.8 AC.

* FAR = Floor Area Ratio for office & commercial use. Density is in dwelling units per acre for residential use.

million square feet of secondary office/warehouse space at 38 locations. Table ES-3 identifies each Satellite Area and provides information about the type and amount of growth assigned to each of the Areas.

Figure ES-5 illustrates the locations of the Planning and Satellite Areas in the Hybrid Plan. (The numbering of the Hybrid Areas is discontinuous because areas were eliminated during the review process.)

2.4 Environmental Improvement Program Alternatives

Alternatives for achievement of environmental improvement goals for the District have been assessed as part of this analysis. The alternatives for environmental improvement in the District range from no action (no implementation of environmental improvements under the SAMP, beyond programs currently in place), to partial implementation of environmental improvement goals using a subset of available mechanisms, to full implementation of environmental improvement goals for the District (through HMDC's Environmental Improvement Program, EIP).

The existing natural environment in the District indicates the stresses of past environmental abuses. Natural and manmade processes of sedimentation and erosion continue to impact the wetland resources of the District, which exhibit lower value monotypic vegetation and urban hydrology. Water quality continues to be impacted by uncontrolled leachate discharges from orphan landfills—leachates with typical “landfill” pollutants (e.g., ammonia, heavy metals) and hazardous pollutants that affect both water quality and aquatic life. While existing wetland regulations direct growth to upland locations, the wildlife habitats in these terrestrial sites are becoming increasingly scarce in the District, reducing the diversity of habitat in the District. These long-standing environmental problems in the District are, for the most part, beyond the scope of existing regulatory programs. Projects to address these major on-going threats to environmental quality, and to create terrestrial habitats from abandoned landfills, are proposed within the EIP.

Alternative mechanisms for implementing environmental improvements in the District include:

- relying on public funding sources to realize environmentally beneficial projects;
- creating new private funding sources to implement environmental improvements;
- implementing environmental management and regulatory enhancements (in addition to minimum compensation requirements related to project impacts);
- coordinating environmental projects that are now administered by a range of governmental agencies; and,
- applying a variant of transferable development rights within the District to achieve conservation objectives.

Table ES-3

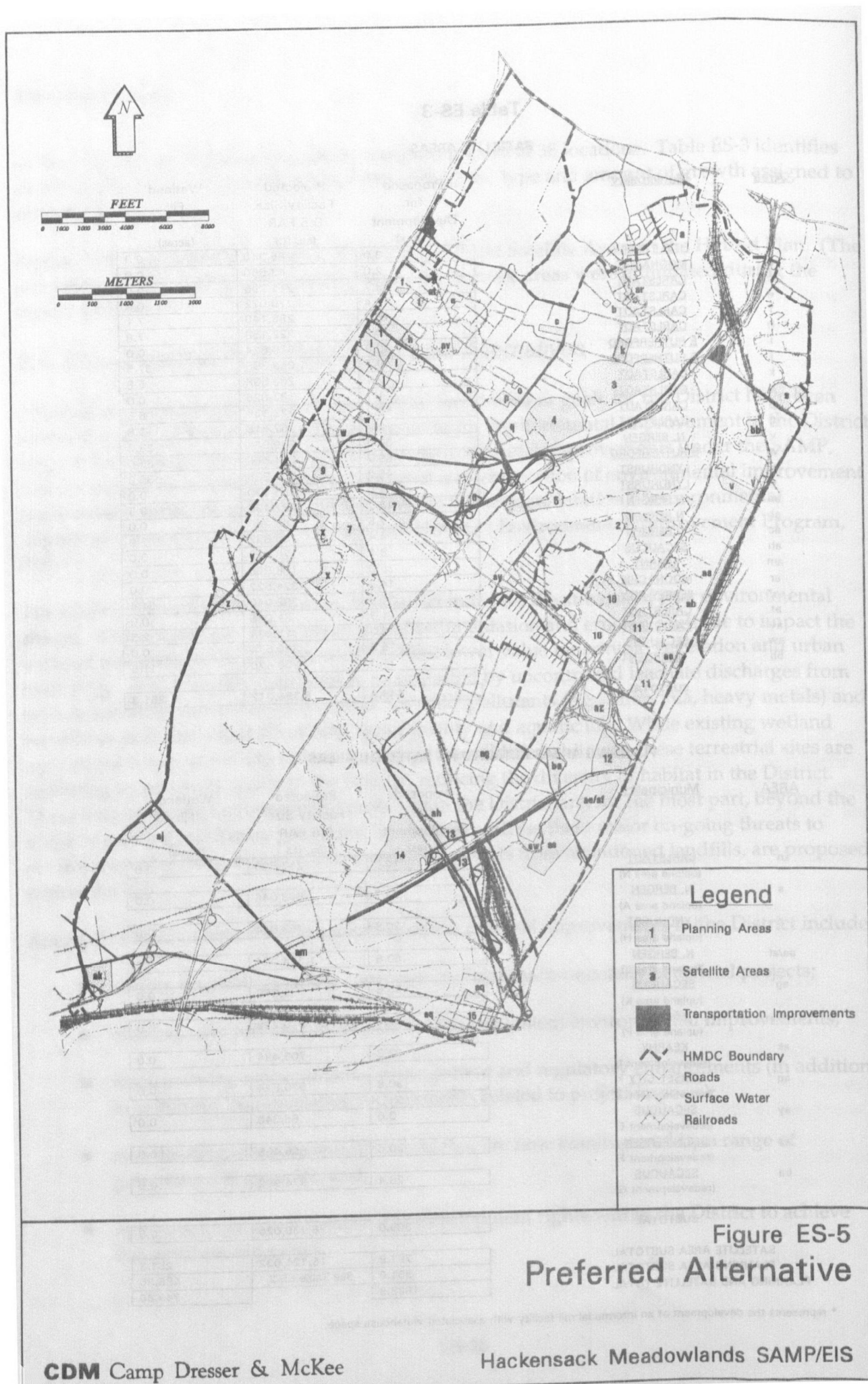
SATELLITE AREAS

Area	Municipality	Proposed for Development (acres)	Projected Facility Size 0.5 FAR (sq. ft.)	Wetland Fill (acres)
a	LITTLE FERRY	3.0	85,340	0.0
b	MOONACHIE	2.0	43,560	0.0
c	CARLSTADT	9.7	211,266	0.0
e	CARLSTADT	12.4	270,072	0.0
f	CARLSTADT	13.0	283,140	7.1
h	CARLSTADT	10.2	222,156	7.8
i	E. RUTHERFORD	30.8	670,824	0.0
j	E. RUTHERFORD	49.1	1,069,398	37.5
k	CARLSTADT	12.1	263,538	5.6
o	CARLSTADT	1.7	37,026	0.0
p	CARLSTADT	10.2	222,156	6.5
q	CARLSTADT	3.1	67,518	1.8
v	N. BERGEN	30.3	659,934	23.3
w	E. RUTHERFORD	39.7	864,666	35.0
x	LYNDHURST	46.2	1,006,236	35.9
y	LYNDHURST	4.0	87,120	0.0
aa	N. BERGEN	13.2	287,496	9.5
ab	N. BERGEN	7.5	163,350	0.0
ac	N. BERGEN	4.4	95,832	2.9
ah	SECAUCUS	8.1	176,418	0.0
am	KEARNY	5.0	108,900	0.0
ar	MOONACHIE	14.9	324,522	0.0
as*	JERSEY CITY	81.5	392,040	64.4
at	CARLSTADT	1.7	37,026	0.0
av	CARLSTADT	6.3	115,434	2.5
aw	SECAUCUS	18.3	398,574	0.0
bb	N. BERGEN	11.5	250,470	11.5
SUBTOTAL		448.9	8,394,012	251.3

PLANNING AREAS RETAINED AS SATELLITE AREAS

AREA	Municipality	Proposed for Development (acres)	Projected Facility Size 0.5 FAR (sq. ft.)	Wetland Fill (acres)
n	CARLSTADT (upland area N)	10.0	217,800	0.0
s	N. BERGEN (upland area A)	30.7	668,646	0.0
z	LYNDHURST (upland area H)	20.8	453,024	0.0
ae/af	N. BERGEN (upland area L)	60.8	1,324,224	0.0
ag	SECAUCUS (upland area K)	36.5	794,970	0.0
aj	KEARNY (upland area P)	27.1	590,238	0.0
ak	KEARNY (redevelopment I)	32.3	703,494	0.0
aq	JERSEY CITY (redevelopment J)	30.8	670,824	0.0
ay	SECAUCUS (redevelopment E)	3.0	65,340	0.0
az	SEC/N. BERGEN (redevelopment F)	30.6	666,468	0.0
ba	SECAUCUS (redevelopment G)	26.4	574,992	0.0
SUBTOTAL		309.0	6,730,020	0.0
SATELLITE AREA SUBTOTAL		757.9	15,124,032	251.3
PLANNING AREA SUBTOTAL		931.0	See Table ES-2	498.50
PLANNING AND SATELLITE TOTAL		1688.9		749.80

* represents the development of an intermodal rail facility with associated warehouse space.



All the above mechanisms will contribute to achievement of environmental improvement goals in the District. In fact, all the above mechanisms are proposed as part of HMDC's EIP, which is an integral component of the Preferred Alternative for the SAMP.

Several environmental improvement projects have been implemented in the District under various authorities (e.g., hazardous waste remediation via Superfund, landfill closure for a subset of landfills for which closure funds were established, and wastewater treatment plant improvements). However, a number of proposed environmental improvements that are very important in the District (specifically, wetland protection and enhancement, water quality improvement, and closure of orphan landfills) cannot proceed because no programs and no (or only minor) sources of funding are available to address these major environmental remediation and improvement projects. The public resources that can be applied for environmental improvement in the District are limited, and the ability of the taxpayers to fund new government actions are constrained by the rising costs of existing government services.

The projected cost of the EIP, providing comprehensive environmental management and improvement in the District, is almost \$900 million. *Adequate resources are not currently available to reverse the extensive damage the District has experienced, damage that has serious continuing negative impacts on the natural aquatic and terrestrial systems.* It is for this reason that one of the most significant elements of the SAMP is HMDC's proposal to raise new revenues for environmental improvement. Four mechanisms proposed by HMDC provide important new revenues to be dedicated specifically to the EIP: (1) environmental linkage fees to be imposed on new growth; (2) new revenues raised by environmental assessment fees on existing development in the District; (3) Transfer of Development Rights (TDR); and (4) focused application of existing local, state, and federal government funding. Each these programs will play an important role in leveraging the large and interlinked set of environmental improvements proposed in the District.

The alternatives considered for the EIP are discussed in the following sections:

No Implementation of the EIP (No Action). Under the no EIP alternative, existing environmental programs are assumed to continue in the District, but no new programs or projects would be implemented because no new funding sources would be available. Existing programs consist principally of those implemented by HMDC for continued monitoring of water quality in the District, and collection and use of tipping fees to close several of the landfills recently active in the District. Under the no action alternative (i.e., no EIP) no new mechanisms and funding will be available to facilitate active management, control, and improvement of orphan landfills, stormwater from past development, combined sewer overflows (CSOs), and degraded wetlands. The No Action alternative results in serious ongoing degradation of the environment of the District. Leaving unchecked the ongoing discharges to the aquatic and terrestrial environment (caused by historic waste disposal and environmental modification in the District) will result in continued loss of environmental quality in the District, including: water quality degradation, with attendant impacts to aquatic biology, reductions in diversity in habitat and wildlife populations, sedimentation and accretion in wetlands, and air pollution from discharges of methane and other volatile organics to the atmosphere.

Executive Summary

HMDC reports a total of approximately 1,400 acres of past and present undeveloped landfills in the District (many of the past landfills have been built upon). Leachate has been controlled at only two landfills: the 150-acre (BCUA⁴/HMDC) Kingsland landfill and the 45-acre Kearny (HMDC 1-A) landfill. Thus, there are currently approximately 1,200 acres of uncontrolled landfills discharging between 650 and 800 million gallons of leachate to Meadowlands waterways each year.

Landfills also generate gases (primarily methane) which contribute to air quality degradation in the District. Landfill gas collection systems are currently in place at the HMDC 1-A, 1-C, and 1-D landfills, covering approximately 350 acres. Based on estimates of gas generated at these sites, the remaining 1,050 acres of uncontrolled landfills generate between 15 million cubic feet per day (mcf) and 32 mcf. This translates to between 5.4 and 11.5 billion cubic feet per year of methane that is released into the regional airshed, providing precursors for ozone formation. The region is classified as severe non-attainment for ozone.

The effects of the deterioration of the Meadowlands ecosystem on the wetlands environments (caused by both hydrologic changes and degraded water quality) can be seen by comparing the vegetative species found in previous surveys with those found today. In 1819, John Torrey conducted a "catalogue of plants growing spontaneously within thirty miles of the City of New-York." Torrey lists over 190 plant species found in the Meadowlands or surrounding areas in 1819. No salt or brackish marsh species were reported other than *Sabatia dodecandra* (large rose-gentian). Also of note is that *Phragmites* was not yet reported in the Meadowlands. Another survey of flora that included the Meadowlands region was compiled in 1889 by Britton. Britton listed over 220 species from the Meadowlands or surrounding areas. Seven of these were salt or brackish species, indicating a still predominantly freshwater environment.

These past descriptions of the Meadowlands flora can be contrasted with that of today. Of a total of 2,543 acres of vegetated wetlands surveyed (by BCUA consultants), almost 90 percent were dominated by *Phragmites australis*. The remaining 10 percent was almost entirely vegetated by *Spartina alterniflora*. This loss of floral and habitat diversity is a direct result of the altered hydrology and the degraded water quality in the Meadowlands.

The consensus of the SAMP participants is that severe environmental problems exist in the District that must be addressed to make possible a healthy ecosystem in the future. If an EIP is not implemented for the District, critical environmental resources will continue to be compromised, and decades of environmental degradation in the District will remain unaddressed. This alternative has been rejected for the SAMP because the environmental effects of no action are significantly less acceptable than partial or full implementation of the EIP.

Partial Implementation of the EIP. Partial implementation would occur if funding is not available for the full spectrum of proposed EIP program elements and projects. Under partial implementation, an interagency coordination committee for mitigation and environmental improvement action, as is proposed in the EIP, could be implemented. However, the number of projects that could be achieved would be limited (see discussion of full implementation, below).

⁴ Bergen County Utilities Authority

Most future environmental improvements will require new funding because responsible parties are not identifiable or available (such as in the case of the wetland degradation and landfilling that occurred in the District over the last century).

Partial implementation would result in implementation only of programs for which funding exists or can be obtained (e.g., if new funds were available to HMDC, state, or federal agencies for a subset of EIP actions, or if HMDC was successful in securing specific project-related environmental improvements from developers whose projects are approvable and permissible).

Programs that are currently funded, and that are likely to continue to be funded include Green Acres preservation funds, escrow fund to close and monitor four of the eight major orphan landfills in the District, and parks, recreation, and open space programs. These programs would likely continue under partial implementation. However, partial implementation of the EIP would result in no action being taken to identify, remediate, and/or manage a number of significant sources of ongoing contamination in the District.

Projects that would not likely be addressed under partial implementation of the EIP (because of a lack of funding mechanisms) include: landfill closure for 4 priority orphan landfills for which no funding is available; installation of waste gas collection at uncontrolled landfills; management of hazardous waste remediation at scores of listed potentially contaminated sites in the District; and implementation of certain regional non-point source water quality management programs. These sources of pollution are currently discharging significant contamination to the air, land, and aquatic ecosystem of the District. However, current funding sources, and funding potentially available from existing development in the District would be adequate to address only about half of the currently unfunded, yet significant, sources of contamination in the District.

The inability to remediate or control the major sources of contamination under the partial implementation alternative will result in significant, ongoing, and cumulative degradation of the environment in the District. Because partial implementation of the EIP will not address several of the most critical needs for environmental improvement in the District—specifically water quality improvement, air quality improvement, restoration of the aquatic ecosystem, and creation of needed terrestrial habitats—this EIP alternative was not selected for the SAMP. The consequences of partial implementation of the EIP make this alternative unacceptable, especially in comparison to full implementation of the EIP.

Full Implementation of the EIP. Full implementation of the EIP was selected for inclusion in the SAMP Preferred Alternative. Implementing environmental improvement in the District requires proactive management⁵ (especially for areas not covered under existing environmental programs), using new sources of funding dedicated to environmental improvement projects and programs. As noted previously in this section, there have already been significant individual and cumulative adverse impacts to the aquatic and terrestrial environments in the Meadowlands. A number of important EIP projects and programs are essential to realizing wetland, wildlife habitat, and water quality improvement in the District, but such projects are

⁵ A discussion of the implementation of the EIP is included in Chapter 4.

Executive Summary

not eligible for funding or implementation support under available regulatory or management programs. Full implementation of the EIP under the SAMP will allow these inter-related environmental improvement projects to move forward synergistically (including funding for many projects and programs that otherwise have no funding available).

Most significantly, full implementation of the EIP will result in a centrally managed program for pollution abatement, remediation, and enforcement, and will allow *all of the identified hazards and sources of environmental degradation to be controlled and managed, thus preventing future system-wide impacts to air quality, the aquatic ecosystem, and the terrestrial environment*. In conclusion, full implementation of the EIP will significantly advance the restoration of environmental quality in the lower Hackensack River watershed.

2.5 Preferred Alternative

The SAMP Preferred Alternative was created during the planning and environmental study process that was conducted for the EIS. The MOU for the SAMP called for the implementation of specific products pursuant to the SAMP/EIS process: a General Permit and Abbreviated Permit Process for projects consistent with the SAMP; a revised HMDC Master Plan for the District; restrictions on development in specific areas; and application of best management practices for storm water runoff. In accordance with this list of objectives for the SAMP, the SAMP Preferred Alternative consists of the following principal components:

- Adoption of a specific future Land Use Plan (the "Hybrid Alternative") and Transportation Improvements Plan for the District, to be included in the revised HMDC Master Plan and Zoning Regulations (see Section 6.1 of the EIS);
- Full implementation of an Environmental Improvement Program for the District, that comprises a comprehensive series of environmental programs and projects to remediate historic environmental degradation in the District (see Section 2 of the EIS);
- Requirements for Environmental Mitigation (including mitigation review and monitoring), especially wetland mitigation required for wetland impacts (specific mitigation requirements are presented in Section 5 of the EIS, and mitigation oversight is described in Section 6 of the EIS);
- Adoption of SAMP Implementation Mechanisms, including streamlining of the regulatory review process (see Section 6.2 of the EIS), mechanisms for conservation and for funding environmental improvements (see Section 2 and 6.1 of the EIS), SAMP oversight processes, and revisions to those elements of the NJ Coastal Management Plan that relate to the District.

The SAMP Preferred Alternative represents a comprehensive plan for the future of the District. The future land use plan constitutes the development component of the Preferred Alternative, and represents growth anticipated over the 20-year planning period. (The growth anticipated over the 20-year planning period represents virtually all growth anticipated for the long-term

future of the District; the District will reach its buildable limit during the planning period). The land use plan yields an alternative that meets the planning and management goals of HMDC, and the economic development and social needs of the District, while also addressing environmental criteria established through the Clean Water Act (i.e., avoidance, and costs, logistics, and technology criteria associated with the use of specific land areas).

The future land use plan proposed under the Hybrid analysis will allow for the construction of 13,920 new homes in the District, in planned locations, and will allow specific office and related development that will accommodate an estimated 100,000 jobs in the District, over the 20-year planning period for the SAMP. The land use plan proposed in the Preferred Alternative will result in the addition of 17.8 million square feet of primary office space, 2.7 million square feet of commercial space, 13,920 residential housing units, and 15.1 million square feet of secondary office/distribution space in the District. The total land disturbance associated with the Planning and Satellite Areas, as set forth in the Preferred Alternative, calls for the utilization of approximately 1,690 acres of land in the District. The proposed Transportation Improvements call for the additional utilization of about 160 acres of land in the District. The proposed Planning and Satellite Areas were listed in Tables ES-2 and ES-3; proposed Transportation Improvements are listed in Table ES-4.⁶

The implementation of the Environmental Improvement Program is anticipated to lead to significant restoration of the District's natural environment, including areas that were significantly degraded as a result of historic activities.

During the *Screening Analysis of In-District Alternatives* an analysis of Land Management Alternatives was conducted to compare the environmental efficiency of, and the resource protection afforded by, six alternative spatial arrangements for future growth. Following identification of the Preferred Alternative, it was compared to the six Land Management Alternatives, to assess the relative level of impact of the Preferred Alternative.

The comparison of overall environmental impacts, determined using the environmental screening analysis, shows that the Preferred Alternative ranks second lowest in its overall environmental impact (the Redevelopment alternative exhibits the lowest impact). However, as discussed previously, the Redevelopment alternative applied unreasonably high development densities to fulfill the development needs, because only limited acreage of redevelopment land exists in the District. If the Redevelopment alternative is excluded from consideration because of implementation constraints, the Preferred Alternative exhibits the lowest overall environmental impact. Based on its ability to reduce the potential environmental impacts associated with meeting social, economic, and environmental needs in the District, the Preferred Alternative has been subjected to a second, more detailed evaluation of potential environmental impact, and a review of mitigation opportunities, as described in the following chapter.

⁶ Only minor transportation improvements to existing transportation facilities in the District were determined to have no available alternatives, because the low level of impact in the existing location could not be reduced in an alternative location. Alternatives analyses have *not* been conducted for major transportation improvements (either new or existing facilities) for this EIS.

Table ES-4

TRANSPORTATION IMPROVEMENTS INCLUDED IN THE PREFERRED ALTERNATIVE

From Maps, Plans, and Tables Received from HMDc

Project#	Description	Project Area ¹ (Outside P/SAs) (acres)	Wetland Fill (w/o Open Water) (acres)
1	Extend Sea View Ave, south to NE Corridor, replacing Bergen Line.	4.6	0
2	Widen County Ave, from Secaucus Rd to County Ave/Rd.	7.3	0
4	Widen New County Rd, from County Ave/Rd to southern terminus.	2.6	0
5	Realign ramps at Rt 3 and Meadowlands Parkway.	4	0
6	Widen Paterson Plank Rd, from E.Spur NJ Tpk Bridge to West Side Ave.	7.4	0
7	Widen and extend Bergen Ave, from District Boundary to Newark-Jersey City Tpk.	4.9	0
8	Extend Meadowlands Parkway, north to Paterson Plank Rd.	4.1	0
9	Connect/widen Paterson Plank Rd, from W.Spur NJ Tpk across river to existing road.	4.3	0.2
10	New road (Bergen Arches Extension), along existing Bergen Line, from NJ Tpk Interchange at Secaucus Transfer (see #28) to Tonnelle Ave.	11.5	2
12	Widen Belleville Tpk, from Sellers Street (District boundary) to Newark-Jersey City Tpk.	28.1	5.4
13	Widen and realign Castle Rd, from Meadowlands Parkway Extension to New County Rd (entire length).	5.7	0
16	Widen Redneck Ave from Moonachie Ave to Liberty St (entire length).	8.1	0
17	Construction of Park & Ride on approx 7 acres at Moonachie Ave/Railroad St/Industrial Ave.	7.5	0

Table ES-4 (continued)

TRANSPORTATION IMPROVEMENTS INCLUDED IN THE PREFERRED ALTERNATIVE

Project#	Description	Project Area ¹ (Outside P/SAs) (acres)	Wetland Fill (w/o Open Water) (acres)
20	New ramp from W. Spur NJ Tpk northbound at 18W to Rt 120.	7	1.8
21	New road east of Brendan Byrne Arena (Rt 120).	42.3	5
22	Widen Paterson Plank Rd, from Rt 17 to Washington Ave.	15.4	0
25	Widen Moonachie Ave, from Rt 17 to Washington Ave/Moonachie Rd.	14.2	0
26	Rt 17 South Extension, from Rt 3 to Rt 280 (along existing Kingsland Line).	57.5	6.4
27	New rail line from Bergen Line, adjacent to widened NE Corridor (see #40) to NYS&W/West Shore rail (at Rt 3).	4	2.9
28	E.Spur NJ Tpk Interchange at Secaucus Transfer.	31.7	16.8
29	New rail line connecting Main Line to Bergen Line, west of Meadowlands Parkway.	6.6	1.6
30	Widen Main Line from connection from Bergen Line (see #29) to NE Corridor.	20.8	0.7
31	Waterfront Corridor Transit Rail, along District boundary from 50th Street to Vince Lombardi P&R (see #38).	38.4	7.3
32	Widen Newark-Jersey City Tpk, from District boundary to Belleville Tpk.	20.4	0.4
33	Realign/grade separation of Secaucus Rd at NYS&W/West Shore rail and post office access road.	4.2	0.1
34	Grade separation and ramps at intersection of West Side Ave and Paterson Plank Rd, and realignment of West Side Ave.	1	0.1
35	Widen Washington Ave, from Paterson Plank Rd to Moonachie Ave.	13.1	0

Table ES-4 (continued)

TRANSPORTATION IMPROVEMENTS INCLUDED IN THE PREFERRED ALTERNATIVE

Project#	Description	Project Area ¹ (Outside P/SAs) (acres)	Wetland Fill (w/o Open Water) (acres)
36	Widen Secaucus Rd, from E.Spur NJ Tpk to new alignment at West Shore rail (see #33).	2.8	0
37b	Widen Rt 3, from Rt 20 to Berry's Creek bridge.	17.5	0
38	Expansion of Vince Lombardi Park & Ride, approx 10.7 acres.	10.7	0
39	Secaucus Transfer Station, between Planning Area "13", new Turnpike Interchange (see #28), Penhorn Creek, widened Main Line (#30), and widened NE Corridor (see #40).	3	0
40	Widen NE Corridor Line, from Hackensack River to Secaucus Rd.	43.6	11
41	Widen County Rd from New County Rd/County Ave to Tonnelle Ave.	10.9	1
42	West Shore Line Commuter Rail (between Vince Lombardi P&R—#38 and Meadowlands Sports Complex).	50	29.1
	Total	515.2	91.8

1. Includes existing roads and railways

Chapter 3

Environmental Impacts of the Preferred Alternative

The Preferred Alternative has been assessed using impact assessment methods relevant to regional environmental analysis, to identify (at a programmatic level) effects of the Preferred Alternative on environmental resources. Information on the existing conditions of the various environmental resources of the District has been collected, and is used for the purposes of presenting relative impacts. Section 3 of the SAMP/EIS discusses the existing environment of the District. This EIS focuses on regional and cumulative environmental impacts from the Preferred Alternative. Because this comprehensive EIS is being conducted at a regional scale (i.e., District-wide, over a 20-year planning period), all of the impacts discussed in this EIS are evaluated as cumulative impacts. The analyses selected to assess impacts from the Preferred Alternative were chosen because they are appropriate at a regional scale, and, to the extent possible, they reflect cumulative effects. As an example, impacts to aquatic resources are discussed in terms of the amount of primary productivity lost (cumulatively) to the entire Meadowlands ecosystem. Cumulative impacts are also often felt "across" different environmental media. For example, impacts to aquatic biology may occur because of decreases in water quality. To the extent possible, "cross-media" cumulative impacts have been evaluated.

Impacts have been assessed for 18 different environmental or socio-economic topics that are important in the Meadowlands. These topics include biological resources (e.g., wetland and upland habitats for both plants and animals), other natural resources (e.g., water quality, hydrology, air quality, and noise), socio-economic resources (e.g., community facilities, transportation, and local government services), and cultural resources.

If an identified environmental impact is significant, planned and/or appropriate actions to be taken to mitigate adverse impacts have been identified. In some cases (e.g., wetland resources or threatened/endangered species impacts) mitigation actions are required by law. But in many cases (e.g., terrestrial habitat or community facility impacts), mitigation for projected impacts is not required by law. In these cases, appropriate mitigative actions are presented in order to minimize the cumulative environmental impacts of the Preferred Alternative. In many cases, the anticipated mitigation actions, in concert with implementation of the Environmental Improvement Program, result in improved environmental quality in the District.

3.1 Wetlands Impacts

Implementation of the Preferred Alternative will result in impacts to wetland resources in the District. The hybridization process used to identify the Preferred Alternative included review of all feasible upland and redevelopment areas within the District to avoid, where possible, wetland impacts. In addition, development densities (e.g., housing units per acre, square feet of office space per acre, etc.) were maximized to reduce wetland impacts to the greatest possible extent.

Impact Method

In order to assess impacts to wetlands in the District, the indicator value assessment (IVA) method was used. The IVA is an indexing system developed for the SAMP that uses chemical, physical, and biological wetland functional indicators to identify the effects of potential changes to wetlands in the District. The IVA method provides a semi-quantitative measure of wetland functional indicators currently present in the District (relative to other District wetlands), and allows for measurement of potential impacts caused by predicted changes to these indicators. The method being used to evaluate wetland impacts (the IVA method) is based on the WET (EPA, 1989) and AVID (EPA, 1992) previously conducted in the District.

Potential impacts to wetlands are assessed in this EIS by using the IVA method to track wetland functional indicators (and changes to the indicators) for three wetland attributes:

- water quality improvement (WQ),
- wildlife habitat (WH), and
- social significance (SS).

The IVA method operates by assigning a numerical importance rank to a broad range of wetland functional indicators (including features such as water depth, vegetation type, wildlife presence, tidal influence, etc.) as they relate to these three wetland attributes. The IVA provides a numerical score for each wetland (for each attribute) on a scale of 0 to 100. The score for each attribute is then multiplied by the area of the wetland (in acres) to arrive at a final "attribute indicator value" for the AVID Wetland Assessment Area (AA) for each of the three attributes.

In support of this EIS, a field study of the IVA method and its application in the District was conducted. One important conclusion of the field study was that the IVA method resulted in measurements of wetland value comparable to the best professional judgement of the participating wetland professionals.

Direct Impacts

The impact analysis considered two types of wetland impacts using the IVA method: direct impacts and indirect impacts. Direct wetland impacts are those impacts directly associated with the filling of wetlands. The IVA tracks direct impacts by assuming that a wetland that is within a development area is filled and loses *all* of its wetland functional indicators. For the Preferred Alternative, a maximum of approximately 842 acres of wetlands are projected to be filled over the 20-year planning period. This is approximately ten percent of the existing wetlands and aquatic habitat now present in the District. The results of the IVA analysis shows that this direct impact represents between 8% and 12%⁷ of the attribute indicator values of existing wetlands in the District.

⁷ The IVA method actually estimates relative impacts for each of the three wetland attributes. In this summary, impacts are discussed in terms of the range among the three attributes. Additionally, impacts are presented as a percentage of the existing ("baseline") conditions.

Indirect Impacts

When development occurs adjacent to (or upstream from) a wetland, that wetland is likely to experience secondary impacts from the new development. Because these impacts are not caused by "direct" activity in the wetland area, they are termed "indirect" impacts. Indirect impacts (e.g., uncontrolled culverted storm water runoff, hydrologic disturbances and non-point source runoff) lead to a lowering of the wetland value for the indirectly impacted wetlands, but not a complete loss. Indirect impacts to wetlands are measured by evaluating potential changes to the wetland functional indicators of all wetlands that are either adjacent to, or downstream of land projected for development, in order to achieve a conservative estimate of wetland impacts. These indirect impacts are initially calculated by assuming that no management or minimization actions would occur to reduce indirect impacts to wetlands. If none of these management or minimization actions are taken, the Preferred Alternative could indirectly impact an additional 1,945 acres over the 20-year planning period, further reducing the value of the District's wetlands by between 3% and 12%.

SAMP Management

However, these potential "maximum" indirect wetland impacts will be reduced through requirements in the SAMP for structural and site planning techniques, or "best management practices" (BMPs) to reduce (by avoiding and/or minimizing) indirect impacts to the remaining wetlands. Thus, requirements for BMPs, within the SAMP, will result in a reduction of indirect impacts. By implementing appropriate BMPs, the indirect impact of the Preferred Alternative would be reduced to 1,217 acres, resulting in an indirect impact of between 1% and 5% of the values of existing wetlands.

Direct and Indirect Impact

Thus, by using BMPs, the total impact (including both direct and indirect) of full build-out of the Preferred Alternative would result in the filling of a maximum of 842 acres of wetlands, and the reduced functioning of an additional 1,217 acres. The results of the IVA analysis shows that the total impact will be between 11 and 14 percent of the value of the District's existing wetlands.

Wetland Habitat Fragmentation Impacts

Approximately 90 percent of the District's wetlands and aquatic habitats are contained in eight large (over 100 acres in size) interconnected wetland complexes. The remaining ten percent of the District's existing wetlands are smaller, disconnected and/or isolated wetlands. The "connectedness" of the majority of the District's wetlands is important with respect to wildlife usage and movement within and through the District. Substantial fragmentation of the existing wetland habitats in the District could lead to detrimental impacts on wildlife species.

A regional analysis of habitat fragmentation was conducted to identify areas where implementation of the Preferred Alternative might lead to the fragmentation of existing wetland complexes, in turn possibly reducing the wildlife utilization of particular wetlands. The results

Executive Summary

of the analysis showed that a maximum of 287 acres of wetlands might be fragmented from the wetland complexes in the District.

The fragmented wetland areas represent approximately three percent of the existing wetlands in the District (or approximately four percent of the wetlands remaining after full implementation of the Preferred Alternative). Full implementation of the Preferred Alternative could result in fragmentation in three of the eight existing large (over 100 acres in size) wetland complexes (the over 500-acre wetland complex that includes wetlands surrounding the Hackensack River, Berrys Creek, Mill Creek, lower Bellmans Creek, and lower Sawmill Creek; the 170-acre complex of wetlands around the upper reaches of Penhorn Creek; and the 120-acre complex of wetlands around the middle reaches of Penhorn Creek). Additionally, five of the smaller (less than 100-acre) wetland complexes may be fragmented by full implementation of the Preferred Alternative.

Wetland Mitigation

Subsequent to taking avoidance and minimization actions regarding wetlands impacts, a mitigation plan is required under the Clean Water Act to mitigate direct and indirect impacts. A programmatic-level mitigation plan has been identified to compensate for wetland functions and values potentially lost as a result of all fill activity and indirect effects. The mitigation plan identifies a portion of the required mitigation to replace certain wetland functional indicators lost due to indirect impacts, and then identifies wetlands enhancement and creation actions throughout the entire District. It is estimated that the creation of 45 acres of wetlands and enhancement of 3,360 acres of wetlands will provide the remaining mitigation for the unavoidable wetland impacts of the Preferred Alternative. (It should be noted that these enhanced wetlands, because they have been used as Section 404 mitigation for wetlands impacts, cannot be used in the future for wetlands fill.) Figure ES-6 shows locations of anticipated wetland fill under the Preferred Alternative, and proposed wetland mitigation (creation and enhancement) areas. Examples of the proposed wetland enhancement techniques include: re-establishing or improving tidal flow; creating meandering channels (with pools and riffles where appropriate); and replacing monotypic stands of *Phragmites* with a diversity of wetland plants. Procedures for the implementation of wetland mitigation measures are summarized in Chapter 4.

The IVA method was used to predict the gain in wetland value associated with the various mitigation, creation, and enhancement actions identified in the plan. The results of the IVA analysis show that the proposed mitigation plan will result in "no net loss of wetland values" in the District, for all of the three wetland attributes⁸.

To avoid and minimize potential habitat fragmentation impacts, two categories of mitigation strategies can be used: (1) requirements for bridges and/or culverts to maintain hydrologic and habitat connectivity (applicable to linear features—primarily transportation improvements); and

⁸ Based on the analysis conducted for this SAMP/EIS, the proposed SAMP mitigation plan will result in no net loss in wetland values for the Water Quality attribute, and will result in a net gain in wetland values for the Wildlife Habitat and Social Significance attributes.

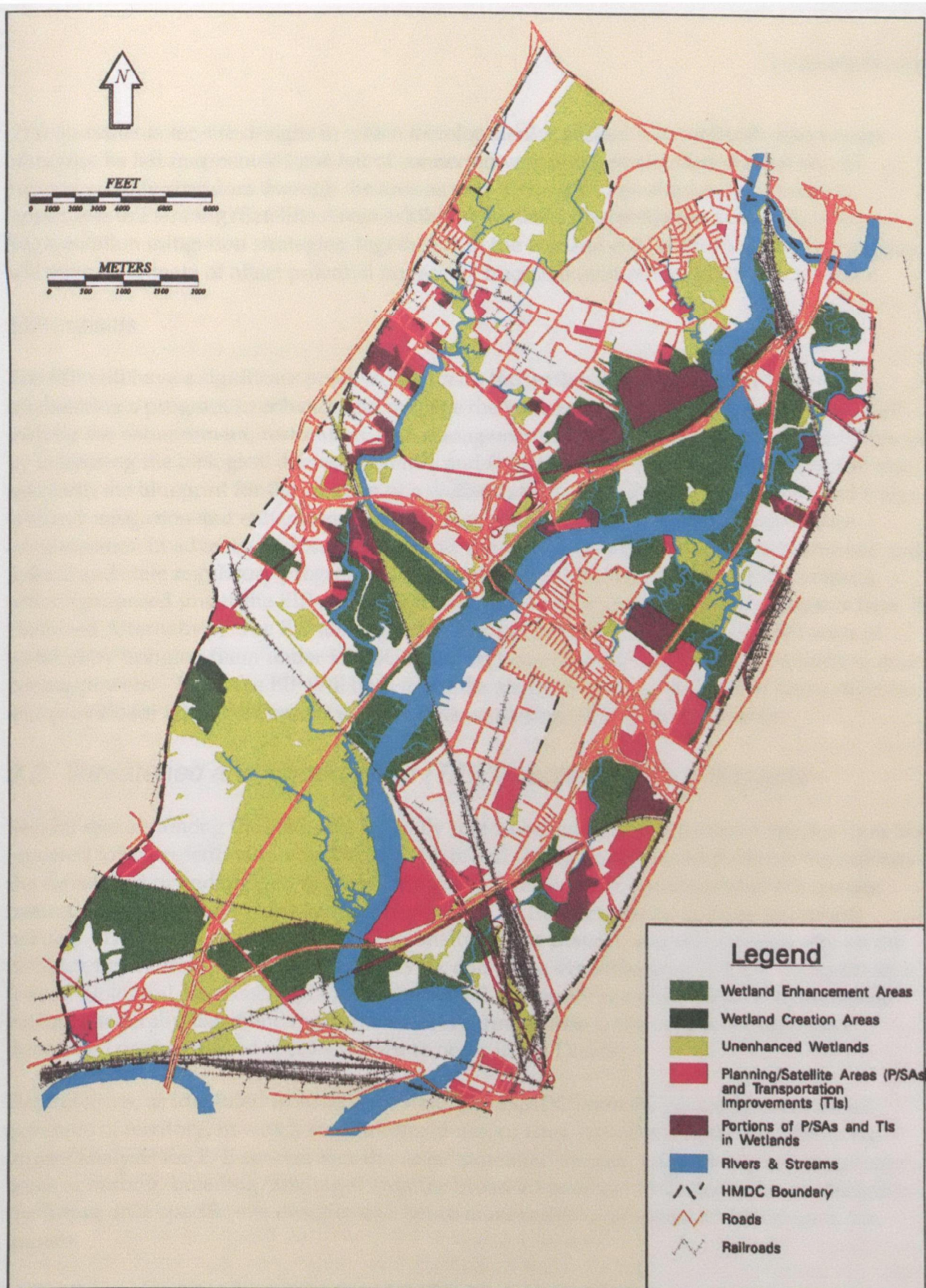


Figure ES-6
Potential Wetland Fill and Mitigation for
Preferred Alternative

(2) requirements for site designs in which development is shifted into wetlands that would otherwise be left fragmented (and out of connected wetlands), or site designs that would provide wildlife corridors through the area as part of the site's open space requirements (applicable to Planning/Satellite Areas exhibiting wetland fragmentation potential). These fragmentation mitigation strategies, together with the wetland enhancement and creation plan, will either eliminate or offset potential impacts of fragmentation of the wetland ecosystem.

EIP Impacts

The EIP will have a significant positive impact on the wetland resources in the District, by establishing a program to enhance and manage the wetlands in the District. Goals of the EIP include the enhancement, restoration, and management of the wetland resources in the District, by increasing the biological diversity, health, and functioning of those wetlands. The EIP also sets forth the blueprint for the creation of a wetlands mitigation bank, to coordinate and foster wetland mitigation and enhancement efforts throughout the District, and to help assure compensation in advance for losses of wetland values that result from activities permitted under federal and state regulatory programs. (It is important to note that wetland enhancement actions proposed under the EIP would be in addition to mitigation for wetland impacts from the Preferred Alternative.) The EIP also includes plans to protect approximately 4,200 acres of wetland by bringing them under HMDC authority, especially through HMDC's planning and zoning powers. Thus, the EIP will both make the required wetland mitigation more effective and provide for additional enhancement of the wetland resources in the District.

3.2 Threatened and Endangered (T/E) Species Habitats Impacts

Several species among the state and federally listed endangered or threatened species have been reported to be present within the District. State and federal laws seek to preserve the habitats of the threatened or endangered species. Impacts to threatened or endangered (T/E) species habitats were assessed by measuring direct loss of, or indirect effects on these important habitats. The analysis was conducted regionally for the District, and relies principally on the resource inventories conducted for the AVID, and those available from NJDEP. In addition, a federal biological assessment (BA) was conducted to identify potential impacts to Peregrine Falcon, a federally-listed endangered bird. Peregrine Falcon is the only federally-listed threatened or endangered species known to occur in the District.

Habitat areas, as identified from federal, state, and HMDC sources, generally cover broad expanses of territory, in which some localized use, or uses, have been observed. Thus, the impact analysis for T/E species uses the term "potential" impact, because impacts to specific areas of nesting/breeding/feeding within the broad areas of use will need to be conducted in the future once specific site designs, and hence more realistic estimates of disturbance, are known.

Using this generalized data on potential T/E habitat areas, the Preferred Alternative has the *potential* to impact, to some extent, general habitat locations for all of the avian and floral threatened and endangered species reported in the District. Actual impacts may be substantially lower than those presented here, due to the uncertainty of habitat locations. The

Executive Summary

wetland enhancement actions taken to mitigate for wetland impacts will avoid disturbance to existing nesting sites, or other actions which might destroy existing habitats for both federal and state T/E species. It should be noted, however, that one of the goals of the wetlands mitigation program is to improve existing habitats such that the existing T/E habitats in the District will expand.

Peregrine Falcon

For the only federally-listed T/E species reported in the District, Peregrine Falcon (*Falco peregrinus*), no direct impact is projected, because no proposed activities would directly cause mortality of any of these birds, and no nesting sites will be destroyed⁹. The potential indirect impact to Peregrine Falcon consists principally of elimination of potential feeding habitat, which in turn might reduce the diversity and abundance of available prey. It is unlikely that size of food supply is a limiting factor for peregrines in the Meadowlands region, as this species readily utilizes prey species associated with heavily developed habitats. However, the fact that peregrines are known to regularly utilize the District suggests that the environment and food supply provided by this area represent an important resource.

Of the total area proposed to be developed in the Preferred Alternative, approximately 600 acres of wetland and 150 acres of upland have been classified in the BA as "average or better" feeding habitat for Peregrine Falcon. Figure ES-7 shows the habitat classifications for wetlands and vacant uplands that are proposed to be developed pursuant to full implementation of the Preferred Alternative. Without compensating mitigation, the total area subjected to impacts would represent more than 10% of the total wetland habitat in the District and 30% of the undeveloped upland habitat, and the loss of this amount of foraging habitat could slightly reduce the carrying capacity of the Meadowlands system for this species. This reduction would be unlikely to adversely affect the stability of the regional population. Effective mitigation of these losses, however, would offset this small adverse impact and may possibly provide net benefits to Peregrine Falcon.

In addition to impacts from the proposed development, impacts to Peregrine Falcon might occur if changes are made to wetlands in order to mitigate for wetland impacts (see discussion of wetlands impacts above). To ensure that actions taken for wetlands mitigation will not adversely impact T/E habitats, the BA conducted for this project also identified habitats for federal T/E species within areas identified in the wetlands mitigation plan. The proposed SAMP wetland mitigation plan is designed to improve overall habitat diversity and wildlife habitat value in the District. By allowing the District to support larger populations of birds (and other wildlife), and possibly a greater diversity of species, such mitigation will increase the prey base available to raptors, and thus would have a substantial positive indirect impact on the peregrines that utilize the District. The cumulative positive impact of the wetlands mitigation plan, in fact, would probably be more than the sum of the individual mitigation projects. Because the overall plan includes numerous hydrological enhancements (new, improved, or re-

⁹ No Peregrine Falcon nests are known to exist in the District. However, two nesting sites have been reported just outside the District boundaries.

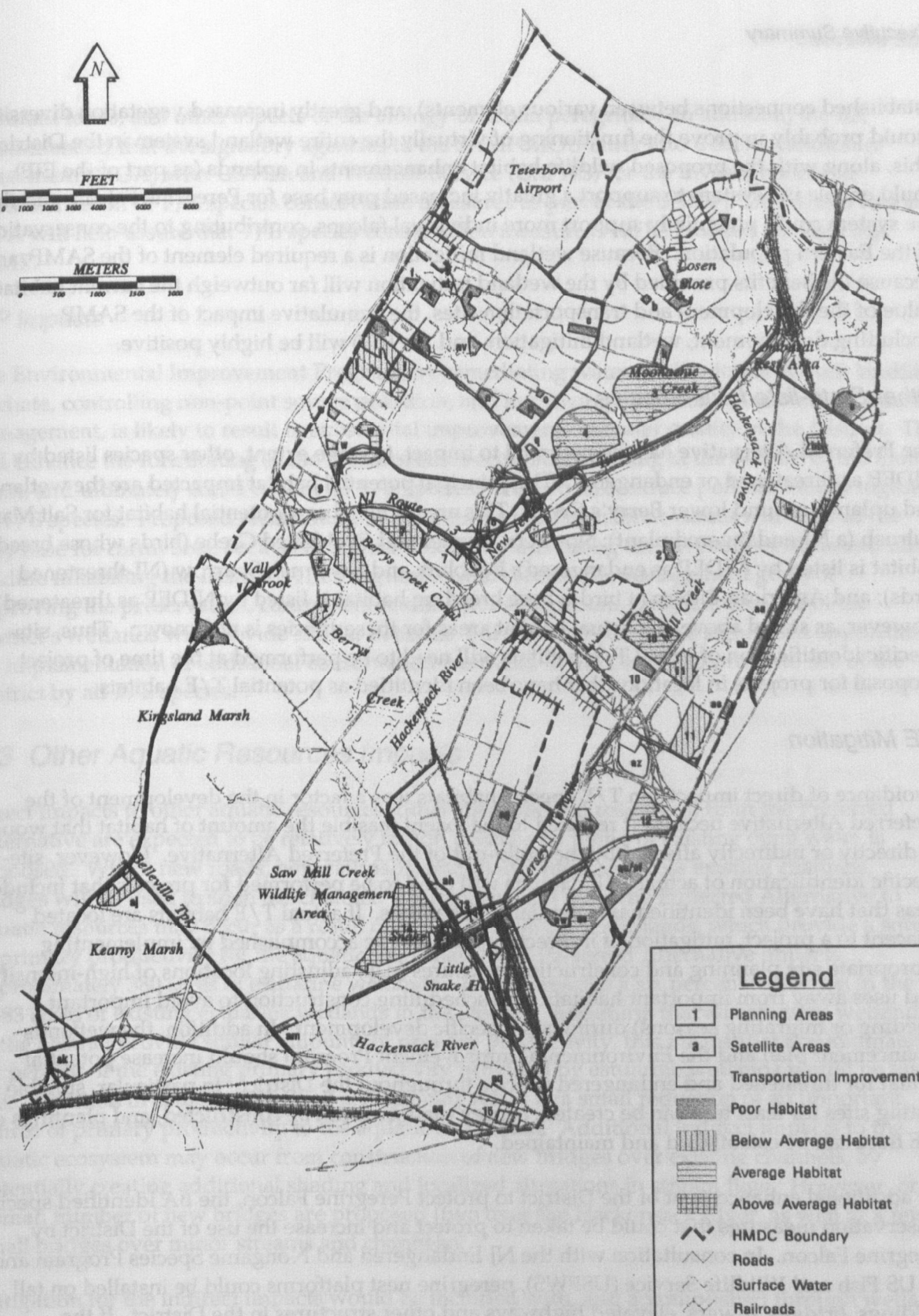
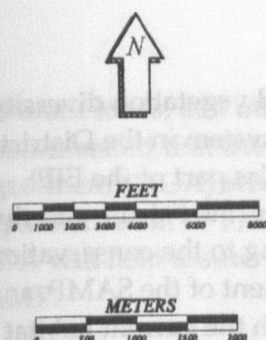


Figure ES-7
Peregrine Falcon
Potential Indirect Impacts

established connections between various elements), and greatly increased vegetation diversity, it would probably improve the functioning of virtually the entire wetland system in the District. This, along with the proposed wildlife habitat enhancements in uplands (as part of the EIP), could enable the system to support a greatly increased prey base for Peregrine Falcon, and thus the system could potentially support more individual falcons, contributing to the conservation of the Eastern population. Because wetland mitigation is a required element of the SAMP, and because the benefits provided by the wetland mitigation will far outweigh the current habitat value of the development and transportation sites, the cumulative impact of the SAMP (including development, wetland mitigation, and the EIP) will be highly positive.

Other State-listed T/E Species

The Preferred Alternative has the potential to impact, to some extent, other species listed by NJDEP as threatened or endangered. The principal potential habitat impacted are the wetlands and uplands around lower Berry's Creek. This area is listed as a potential habitat for Salt Marsh Bulrush (a NJ-endangered plant); Northern Harrier and Pied-billed Grebe (birds whose breeding habitat is listed by NJDEP as endangered); Bobolink and Savannah Sparrow (NJ-threatened birds); and American Bittern (a bird whose breeding habitat is listed by NJDEP as threatened). However, as stated above, the actual habitat areas for these species is not known. Thus, site-specific identification of actual T/E habitats will need to be performed at the time of project proposal for projects in locations that have been identified as potential T/E habitats.

T/E Mitigation

Avoidance of direct impacts on T/E species habitats was a factor in the development of the Preferred Alternative because it reduced to the extent feasible the amount of habitat that would be directly or indirectly affected by the build-out of the Preferred Alternative. However, site-specific identification of actual T/E habitats will need to be performed for projects that include areas that have been identified as potential T/E habitats. If actual T/E habitats are located adjacent to a project, mitigation of indirect impacts can be accomplished by implementing appropriate site planning and construction measures (e.g., adjusting locations of high-intensity land uses away from important habitats, and scheduling construction to avoid important breeding or migrating seasons) during site-specific development. In addition, the wetlands enhancement plan and the Environmental Improvement Program should increase potential habitat for threatened and endangered species throughout the District. In particular, suitable nesting sites for least tern can be created, osprey platforms can be constructed, and plantings of T/E flora can be established and maintained.

For additional enhancement of the District to protect Peregrine Falcon, the BA identified specific conservation measures that could be taken to protect and increase the use of the District by Peregrine Falcon. In consultation with the NJ Endangered and Nongame Species Program and the US Fish and Wildlife Service (USFWS), peregrine nest platforms could be installed on tall buildings, bridges, towers, elevated highways and other structures in the District. If the Meadowlands system has additional carrying capacity for breeding birds, such a program could help to further expand the peregrine population of the Mid-Atlantic Coast region. The existence of known nest sites in accessible locations could facilitate research on productivity, current

pollutant loads, and other aspects of the biology of urban peregrines. In addition, the BA recommended that the signatory agencies to the SAMP MOU enter into a Memorandum of Agreement (MOA) with US Fish and Wildlife Service (USFWS) for the investigation and implementation of T/E species conservation measures as part of the SAMP. This conservation MOA will help assure that T/E species conservation measures will be realized through the SAMP.

EIP Impacts

The Environmental Improvement Program, by remediating water quality impacts from landfill leachate, controlling non-point source pollution, and improving flood control and storm water management, is likely to result in substantial improvements to water quality in the District. This will enhance the functioning of the Meadowlands ecosystem starting at the bottom of the food chain, and ultimately could benefit all T/E species. It could also reduce pollutant loads ingested by T/E species. Proposed reclamation of landfills for wildlife habitat values will expand the prey base for carnivores, such as Peregrine Falcon, by increasing the diversity of birds and other wildlife inhabiting the District. The Program's natural-resource management goals of improving the preservation, control, enhancement, management, and maintenance of the District's wetlands will provide similar benefits. Furthermore, there is a significant opportunity for implementation of additional conservation measures in the District to promote use of the District by all T/E species.

3.3 Other Aquatic Resources Impacts

Direct impacts to other aquatic resources (other than wetland resources) from the Preferred Alternative are expected to be relatively minor, because no filling of existing open water is proposed. Where new roads, new railroads, and road widenings cross existing channels, bridges will be used to span the channel. Indirect impacts from the Preferred Alternative to aquatic resources may occur as a result of the loss of estuarine wetlands, which provide a source of primary productivity for the aquatic food chain. The Preferred Alternative impacts approximately 380 acres of estuarine wetlands. This represents a six percent reduction in the 6,583 acres of existing estuarine wetlands in the District. Assuming that all estuarine wetlands in the District provide similar amounts of primary productivity, this means that approximately six percent of the existing primary productivity provided by estuarine wetlands would be lost. This reduction in estuarine wetland acreage may result in a small reduction of an important source of primary productivity to the aquatic food chain. Additional indirect impacts to the aquatic ecosystem may occur from construction of new bridges over existing channels, by potentially creating additional shading and localized alterations in stream flow. However, only a small number of new bridges are proposed (two over the Hackensack River, as well as a few small bridges over minor streams and channels).

Mitigation for the indirect impacts would be included with, and accomplished through wetland enhancement under the wetland mitigation plan. By creating or enhancing 3,400 acres of wetlands, and improving the circulation in and communication with open water areas, the predicted reduction in estuarine wetland acreage would be more than compensated for by the increased productivity of the remaining wetlands, as a result of enhancement activities.

Indirect impacts from the EIP will consist of benefits to the aquatic food chain by reducing pollution from landfill leachate, from hazardous waste sites, and from other non-point sources. All of these actions serve to improve water quality in the District, which will improve the aquatic ecosystem.

3.4 Terrestrial Ecosystems Impacts

The Preferred Alternative impacts a substantial percentage of the existing "vacant" upland acreage, which is the predominant terrestrial habitat in the District. The major terrestrial resources in the District (except for the remnant and unique habitats discussed below) are habitats on open vegetated areas in the District that have evolved on portions of wetlands filled in the past for solid waste disposal. These areas provide both a habitat for numerous terrestrial species that have relocated when nearby vacant uplands (outside the District) were built on, and provide a habitat for species that use both wetlands and uplands. Because the majority of the terrestrial habitats that would potentially be impacted under the Preferred Alternative are located on areas that were filled over the last century, there are virtually no impacted upland habitats that can be considered indigenous. Many open spaces have also been subject to continuous disturbances, such as vehicular traffic and fire, which have slowed the natural process of succession.

Those areas not in wetlands that were characterized by HMDC as "vacant" land were used as the basis for assessing potential impacts of the Preferred Alternative on terrestrial resources.

The Preferred Alternative will potentially impact approximately 660 acres of upland habitat. This represents approximately 31 percent of the existing 2,176 acres of vacant uplands in the District. Figure ES-8 illustrates the locations of upland habitat impact. The remaining vacant upland habitat consists primarily of historic landfills and contaminated sites. All of these upland areas are approximately equal in importance to the wildlife ecosystems in the Meadowlands, except for the upland areas that are identified as habitats for threatened or endangered species, or that are considered remnant or unique (discussed below).

As part of the solid waste improvements included in the EIP, abandoned or closed landfills will be reclaimed as upland habitats for plants and animals. There are approximately 960 acres of historic, closed or abandoned landfills in the District identified in the EIP for habitat reclamation. As part of the EIP, clusters of desirable native plantings will be established on select areas on the landfills. These "planting islands" will function as seed sources which will be naturally dispersed by wind, animals, and insects to vegetate the landfill. This newly created habitat will serve as a valuable refuge for birds, mammals, and insects that require upland ecosystems. To the degree possible, new terrestrial habitats will be designed to serve as replacements for the habitat lost due to implementation of the Preferred Alternative. Thus, the EIP will provide a positive impact to terrestrial resources by creating or enhancing approximately 960 acres of upland habitat in the District.

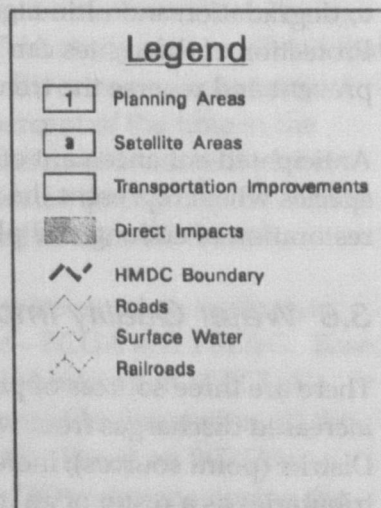
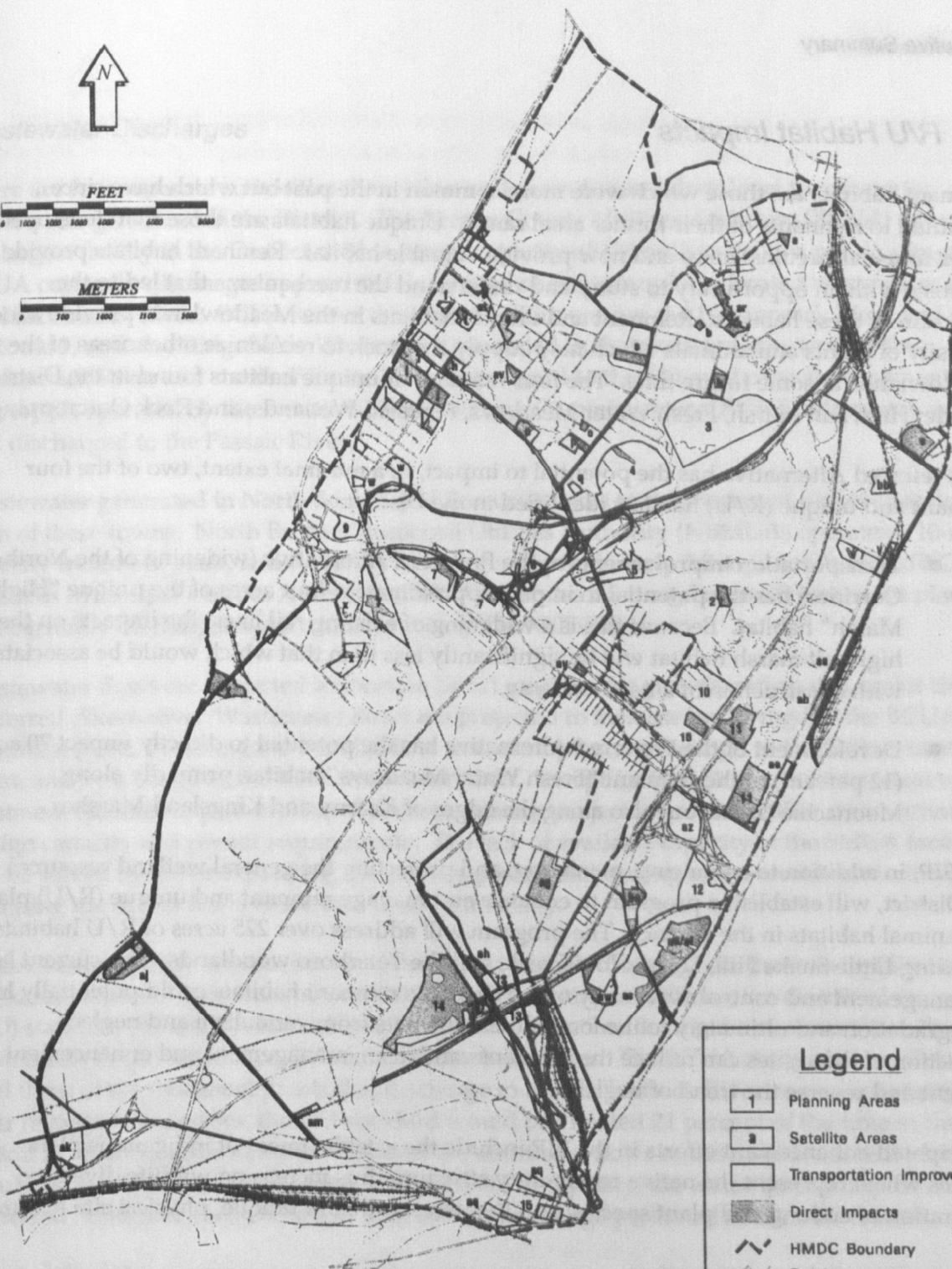
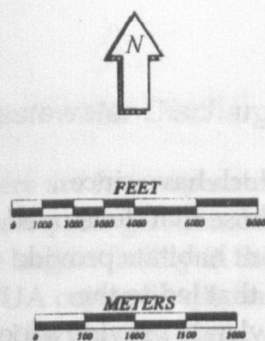


Figure ES-8
Terrestrial Resource Impacts of
Preferred Alternative

3.5 R/U Habitat Impacts

Remnant habitats are those which were more common in the past but which have since dwindled to remnants of their former areal range. Unique habitats are those that developed under unusual circumstances and now provide valuable habitat. Remnant habitats provide scientists with an opportunity to study and understand the mechanisms that led to the reduction of these habitats. Remnant and unique habitats in the Meadowlands provide a local diversity of plants and animals which may supply the stock to recolonize other areas of the Meadowlands at some future time. The four remnant or unique habitats found in the District include: High Salt Marsh, Fresh Water Meadows, Forested Wetlands, and Rock Outcroppings.

The Preferred Alternative has the potential to impact, to a minimal extent, two of the four remnant and unique (R/U) habitats identified in the District:

- Transportation improvements of the Preferred Alternative (widening of the Northeast Corridor) has the potential to impact approximately four acres of the unique "High Salt Marsh" habitat. Because this is a widening of existing rail lines, the impacts on the high salt marsh habitat will be significantly less than that which would be associated with construction of a new roadway.
- Development of the Preferred Alternative has the potential to directly impact 70 acres (12 percent) of the remnant "Fresh Water Meadows" habitat, primarily along Moonachie Creek, but also along the edges of Kearny and Kingsland Marshes.

The EIP, in addition to enhancing, managing, and protecting the general wetland resources of the District, will establish a program to enhance and manage remnant and unique (R/U) plant and animal habitats in the District. The program will address over 225 acres of R/U habitats, including Little Snake Hill, Losen Slote Creek, and the Teterboro woodlands. The current lack of management and control over many of the District's remnant habitats could potentially lead to degradation and ultimately to the loss of these habitats from vandalism and neglect. Protection of these sites can reduce the threat of vandalism; management and enhancement can prevent and reverse the trend of neglect.

Anticipated enhancement efforts in the EIP include the establishment of indigenous plant species which represent the native community structure thus increasing wildlife diversity; restoration of endangered plant species; and the preservation of unique, physical site features.

3.6 Water Quality Impacts

There are three sources of potential impact to water quality from the Preferred Alternative: increased discharges from wastewater treatment plants that serve the growth areas in the District (point sources); increases in storm water runoff to the Hackensack River and its tributaries as a result of an increase in impervious surfaces (non-point sources); and temporary construction activities (both point and non-point sources).

Wastewater Discharges

There are four separate authorities that collect and provide secondary-level treatment for wastewater generated in the District. The Bergen County Utilities Authority (BCUA) operates the largest facility in the District, with a design capacity of 100 million gallons per day (mgd). BCUA currently discharges approximately 70 mgd of secondary-level treated wastewater into the Hackensack River. BCUA serves the municipalities west of the Hackensack River and north of Route 3, and also Ridgefield. Wastewater generated in the municipalities west of the Hackensack River and south of Route 3 is now pumped to the 330-mgd capacity treatment plant in Newark operated by the Passaic Valley Sewerage Commissioners (PVSC), where it is treated and discharged to the Passaic River.

Wastewater generated in North Bergen and Secaucus flows to the treatment plants operated by each of these towns. North Bergen Municipal Utilities Authority (NBMUA) operates a 10-mgd capacity treatment plant, and currently discharges approximately 5.0 mgd to Chromakill Creek. Secaucus Municipal Utilities Authority (SMUA) operates a 5.1-mgd capacity treatment plant, and currently discharges approximately 3.6 mgd to Mill Creek.

Wastewater flows are projected to increase by 6.1 mgd for the growth anticipated under the Preferred Alternative. Wastewater flows are projected to increase by 2.7 mgd to the BCUA treatment plant, by 0.5 mgd to the NBMUA treatment plant, by 2.6 mgd to the SMUA treatment plant, and by 0.3 mgd to the PVSC treatment plant. Except for SMUA, the existing wastewater treatment facilities appear capable of accommodating projected growth within their current design capacity and permit requirements. The lack of available capacity at the SMUA facility can be solved by either expanding the existing plant, constructing a new treatment facility, or pumping the excess flows to another treatment facility.

BCUA has completed a major study of the impact of their discharge on the water quality of the Hackensack River. This study showed that, under existing conditions, the dissolved oxygen (DO) standard (4.0 mg/l) was violated 19 percent of the time during the summer (June through September) in the "critical reach" of the Hackensack River. The BCUA study also predicted that, if all three of the treatment plants that discharge to the Hackensack River were discharging at their respective capacities, the DO standard would be violated 21 percent of the time in the critical reach during the summer. Because the additional flows to the three treatment plants would be less than what is required to bring them to capacity, the water quality impact of the Preferred Alternative would be less than the minor change predicted in the BCUA study.

The SAMP embraces the ongoing water quality improvement efforts being taken by the two principal point source dischargers into the lower Hackensack River—BCUA and PSE&G. Based on current information, the most likely future scenario would involve relocation of BCUA's outfall to near Berrys Creek, along with a major reduction in (and possible elimination of) the thermal discharge from PSE&G (through re-powering of their plants). Based on BCUA's analysis of water quality in the District, this scenario would reduce DO violations during the summer from an existing 19 percent of the time to between 0.8 and 5.5 percent of the time.

Executive Summary

In addition to water quality problems indicated by low dissolved oxygen, heavy metals and toxics can be present in wastewater discharges. Given the nature of the proposed development, however (predominantly office, commercial, and residential), significant additional heavy metal or toxic loadings are not anticipated. However, industrial wastewater containing heavy metals and/or toxics may require pretreatment to ensure that discharges of effluents from wastewater treatment plants do not result in significant adverse impacts to surface waters.

Storm Water Runoff

Storm water runoff would increase from the Planning/Satellite Areas as a result of the creation of additional impervious surfaces in the District. The potential impact of storm water discharges on water quality in the District was assessed by estimating the impacts of specific pollutants to be discharged from the proposed development areas.

The Preferred Alternative has the potential to increase loadings of contaminants by between one and three percent of the existing storm water loadings to the system. This translates to an *overall* increase in contaminant loading to the lower Hackensack River of less than 0.15 percent¹⁰. Of the seven contaminants modeled, only three—suspended solids, copper and zinc—have the potential to be present in storm water discharge from the Planning/Satellite Areas at concentrations greater than measured ambient concentrations in the District, or above EPA's Gold Book standards where ambient concentrations are not available. Standard storm water detention controls are recommended (and will be required by the SAMP) to reduce copper, zinc and suspended sediment discharges. Thus, the water quality impacts from the Planning/Satellite Areas should be minimal.

Construction Activities

Implementation of the Preferred Alternative will include construction activities in the Planning/Satellite Areas and along the transportation improvement corridors. These construction activities may have temporary and localized impacts on water quality. The primary impact will be from the disturbance of soils, which will lead to increased sediment discharges into nearby streams, creeks, or wetlands. The impacts will cease once final site grading and landscaping is completed. These temporary localized impacts should have no significant long-term impacts on the water quality in the District. Additionally, it is recommended that standard construction practices, such as the application of hay or mulch ground cover, be implemented to minimize construction-related sedimentation impacts.

EIP Impacts

The EIP will have a positive impact on water quality in the District by bringing about a reduction in landfill leachate, cleanup of hazardous waste sites, and a reduction in the non-permitted releases of pollutants.

¹⁰ The BCUA modeling concluded that storm water contributes less than five percent of the total loadings to the Hackensack River.

Mitigation

Although non-point source loadings may have a slight negative impact on the existing low water quality in the District (providing storm water detention is employed to aid in the removal of urban runoff pollutants), other efforts are likely to improve water quality in the District. The SAMP embraces on-going water quality improvement efforts being undertaken by major point source discharges to the lower Hackensack River. The conclusion of the water quality analyses described above is that these water quality improvement efforts, together with the storm water management controls (BMPs), and the other water quality improvements effected by the EIP, will result in a significant improvement in water quality in the District.

Standard storm water detention controls are recommended (and will be required by the SAMP) to reduce lead, zinc, copper and suspended sediment discharges, particularly for the smaller Planning/Satellite Areas, where there is less chance for filtration and settling that occur during overland flow to remove contaminants from the storm water.

3.7 Soils Impacts

The combined impacts on soils from the Preferred Alternative would primarily consist of the potential disturbance of 842 acres of marsh soils and 1,363 acres of udorthents and urban land soils. Mitigation of these impacts will include implementation of soil erosion and sedimentation control and soil conservation measures.

3.8 Surface Water Hydrology Impacts

Approximately 13,288 acres of the District are included within the federally delineated (FEMA) 100-year floodplain. The Preferred Alternative will result in development of approximately 1,257 acres of the floodplain. No development is anticipated within the floodway. The Meadowlands District is affected principally by tidal, not fluvial, flooding, whereby flooding is caused principally by the elevation of offshore tidal surges, related to storm effects, wind, and tidal change. The impacts of growth in the District on tidal flooding events, which are the predominant flood type in the District, would be negligible. Using simple calculations related to the volume and surface area of the 100-year floodplain it is estimated that development in the Planning/Satellite Areas has the potential to increase the water surface elevation of the 100-year flood, which is currently about elevation 8.5 feet, by approximately three to six inches, as a result of floodplain displacement in a *fluvial* flood event (i.e., produced by flow from upstream in the river). The effects of development under a tidal flood event are significantly lower, but cannot be quantified without complex ocean modeling.

The EIP proposes to conduct several studies related to flooding in the District, including a regional flood study, and specific studies to determine possible solutions to flooding in particular areas in the District. Based on the results of these studies, flood control measures such as tide gates may be constructed to reduce the effects of existing flooding problems. In addition to structural controls such as tide gates, levees, pumps, and flood walls, implementation of the EIP will reduce flooding by increasing the effectiveness of existing

Executive Summary

wetlands (in some cases, by removing existing fill material to increase flood storage capacity) in the District to store flood waters.

The Preferred Alternative will affect the surface water hydrology by altering the existing hydrology of certain wetlands in the District. To mitigate for the potential localized alteration of surface water hydrology from Planning/Satellite Area development, site planning will emphasize reconnecting isolated wetlands to the hydrologic network of the District. As was discussed above, specific mitigation methods include: installation of culverts under roads or railroads, maintenance of existing storm water peak flows, and maintenance of existing flow patterns through Planning/Satellite Areas. Site planning approaches will be overseen by HMDC through site plan review authority; NJDEP, as related to water quality certification, and federal agencies when federal permits are necessary.

3.9 Groundwater Impacts

Because most of the District lies within the lower elevations of a river valley, most locations are groundwater discharge zones. While the Planning/Satellite Areas and Transportation Improvements will result in only negligible changes to groundwater discharge and recharge, the EIP will result in substantial control of landfill pollutants currently being discharged to the surface water system.

3.10 Land Use and Zoning Impacts

Implementation of the Preferred Alternative will expand residential, office, commercial/retail, and industrial land uses in the District. Under the Preferred Alternative, the area devoted to primary and secondary office space would increase from 250 to 640 acres, residential uses would increase from 300 acres to 722 acres, commercial uses would increase from 362 acres to 429 acres, and industrial uses (including warehousing) would increase from 3,616 to 4,099 acres. Additionally, the amount of dedicated open space would increase from 1,798 to 3,705 acres. After full implementation of the Preferred Alternative, the largest future land uses in the District would be industrial land (4,099 acres), dedicated open space (3,705 acres), and land classified under HMDC's land use inventory as vacant (2,568 acres, which includes wetlands, undeveloped uplands, abandoned industrial sites, and historic landfill areas).

Most of the increase in active land uses—residential, office, commercial/retail, and industrial land—would occur within the 5,558 acres of land classified as vacant (see above) that currently exists within the District. Some of the new land uses would replace blighted and underutilized industrial properties.

The adoption of the SAMP will provide a framework for HMDC's revision of its Master Plan, and adjustments to the Zoning Ordinance. The new HMDC Master Plan will reflect the emphasis of balanced growth and environmental protection developed during the SAMP process. After adoption of a new Master Plan, a new Zoning Ordinance will be adopted to implement the Master Plan and the SAMP, allowing growth and development to proceed more predictably within the framework of the SAMP. The Zoning Ordinance, and Site Plan Review regulations will contain environmental performance standards that require, for example,

provision of open space/recreation in Planning Areas, and provision of Best Management Practices for storm water control as related to development.

On balance, the SAMP and related zoning changes will result in reductions in the areal extent of development allowed by the 1972 Master Plan and Zoning Ordinance. The central downtown growth model envisioned in the 1972 Master Plan will be replaced by a growth center model that is more sensitive to the ecological needs of the District's environment. Implementation of the EIP will increase the amount of dedicated open space by reclaiming historic landfills and converting the landfills to upland wildlife habitat and by creating additional parks and recreation areas.

3.11 Financing of Local Government Services Impacts

The growth anticipated under the SAMP and new District Master Plan in the Planning/Satellite Areas will increase the sources of property tax revenue available to the municipalities within the District. The development of land that is currently vacant or under-utilized and proposed for office, industrial, commercial, or residential growth will double the total assessed value of property within the District from \$5.1 billion in 1993 to an estimated \$10 billion. Property tax revenues to the municipalities (after county taxes) are projected to grow from \$83.1 million to \$163.2 million, assuming the revised Master Plan is fully realized over the 20-year planning period.

The increased tax revenue from growth will be reduced, to a minor degree, by public acquisition of approximately 500 acres of wetland properties to be preserved under the transfer of development rights (TDR) program.

The SAMP and new HMDC Master Plan will provide for population and employment growth in the District, balanced with conservation and enhancement of valuable environmental resources. Growth will be implemented at comparatively high densities, allowing economic benefit to the region while minimizing the environmental and economic costs of sprawl inherent in most contemporary suburban growth. High quality, planned growth in combination with wetlands restoration and conservation is predicted to increase land values, both within the District and beyond its borders—a result of encouraging more spatially-efficient economic use of private property.

There will be additional costs incurred by the municipalities in order to provide services to new residents and employees. One of the primary additional costs will be schooling costs for a projected increase of 5,500 children in the District (at full build-out of the Preferred Alternative). The majority of the increased demand for educational services will occur in Secaucus and Carlstadt. Costs for other governmental services—such as police, fire protection, emergency medical services, and public works—will also increase. Fiscal impacts at the municipal level will be determined, and issues resolved, during the HMDC site plan review of individual projects. Project-related service standards are too detailed to address at the regional scale.

The land targeted for transportation improvement will become public property and thus will be removed from the municipal tax rolls. However, the resulting loss in municipal tax revenues

Executive Summary

will be more than offset by the property tax revenues from anticipated growth. Furthermore, it is anticipated that developer contributions will fund a portion of the new service needs (e.g., active recreation facilities, fire and emergency response equipment, community meeting space) pursuant to the HMDC site plan approval process.

3.12 Utility Infrastructure Impacts

Wastewater

The growth anticipated in the District under the SAMP is projected to increase wastewater flows to the wastewater treatment plants serving the District, with the greatest new flows directed to the Bergen County Utilities Authority (BCUA) and the Secaucus Municipal Utilities Authority (SMUA) facilities. As discussed in the water quality impacts section, projected flows to the SMUA treatment plant (at full build-out of the Preferred Alternative) are above the plant's current available capacity. To provide treatment for the additional wastewater, either the plant will need to be expanded, additional facilities constructed, or some of the wastewater from the Preferred Alternative that would normally be directed to SMUA will need to be redirected to other local treatment plants (such as PVSC via Jersey City).

Water

Most of the Planning/Satellite Areas are within the in-District service areas of the Hackensack Water Company. Planning/Satellite areas within Kearny and Jersey City would be served by Jersey City Water Company, and those within Kearny would be served by Kearny Municipal Utilities Authority (MUA). Based on Hackensack Water Company water use factors, the anticipated homes and workplaces would require an estimated average daily water supply of 8.3 mgd. The Hackensack Water Company has indicated that the company has adequate supply and treatment facilities to serve the projected growth in the District. There is also projected to be no supply problems for Kearny MUA or Jersey City Water Company, where similar conditions exist.

Mitigation

With the exception of the need for additional wastewater treatment capacity in Secaucus, which is addressable, no significant adverse utility impacts are predicted; no mitigation measures appear to be necessary.

3.13 Population and Employment Impacts

Realization of the Preferred Alternative over the 20-year planning period will add a total of 13,920 dwelling units to the District, housing an estimated 33,408 people. The 13,920 housing units proposed for the Meadowlands under the Preferred Alternative would come on the market gradually, in response to existing demand. Ranging from affordable to luxury units, the housing would attract people from a wide range of incomes and geographic locations. The creation of new housing opportunity, including affordable housing, is a major positive impact of the proposed plan.

Development of new primary and secondary office, commercial, light industrial, and warehousing facilities in the Planning/Satellite Areas will create many new employment opportunities. The total potential increase in permanent employment in the District under the SAMP amounts to approximately 112,000 new jobs. The creation of new employment opportunity, both construction-related and permanent, is a significant positive impact of the proposed plan.

The range of prospective office, retail, and manufacturing jobs, together with the planned housing, is designed (and expected) to attract many people to both live and work in the District, reducing commutation requirements. The Preferred Alternative will provide for the District's growth needs by creating an integrated home, work, and recreation environment, with a relatively high land use efficiency.

3.14 Community Facilities Impacts

An increase of approximately 33,400 residents (including a projected 5,500 children) and 112,000 workers in the District over the 20-year SAMP planning period will require many new and expanded community facilities. These community facilities will be provided both via the development application review and approval process (as carried out by HMDC) and by the expansion of existing municipal services. The distribution of financial responsibility for such facilities occurs at the individual project review level, and is usually negotiated among the host municipality, the project applicant, and the planning review agency.

Education

The new expanded housing stock could add about 5,500 school-age children to the District's population over the 20-year planning period. An increase in the capacity of the local educational facilities will be required to accommodate this increased student population. At an average of 25 pupils per classroom, the school districts in the affected communities will need approximately 220 new classrooms. The school systems principally affected will be those of Secaucus and Carlstadt, where the majority of the new residences will be located. The HMDC development review process requires the dedication of space for school facilities by sponsors of large projects.

Health Care

The approximately 33,400 new residents and approximately 112,000 new employees in the District would increase the use of regional health care facilities, including hospitals. There are now 2,593 hospital beds in Hudson County and 2,775 beds in Bergen County. The prospective population growth in the Meadowlands could be accommodated by the currently under-utilized hospitals in the region without physical expansion.

Police

The 1990 estimated District population of 15,154 is projected to grow by approximately 33,400 people. Using standard service multipliers, this growth could necessitate an increase in police

Executive Summary

protection by 2.01 officers per 1,000 residents. The total population requiring police services could approach 145,000 residents and workers. New police stations, officers, vehicles, and equipment would be added to the existing police operations already present throughout the District, as needed.

Fire

The future population and density of development in the District will require additional fire protection staff and facilities to achieve appropriate levels of fire protection. Using standard service multipliers, the expansion of the resident population by approximately 33,400 could require an additional 1.64 firefighters per 1,000 new residents. Non-residential development in the District will also require increased fire protection. However, fire safety services should be based on an analysis (in order of priority) of response time, staffing, and equipment available at the time specific development projects are proposed.

EIP Impacts

The EIP proposes the creation of "an urban oasis of wetlands, parks, and reclaimed/restored open space in the District." The HMDC parks and preserves program will result in the transformation of District landfills and degraded wetlands into parkland, using state-of-the-art landfill closure improvements. The general locations and sizes of parks and preserves proposed under the EIP are shown in Figure ES-9. The Hackensack River is the central open space corridor in the District and serves as the centerpiece for park development. Implementation of the SAMP and EIP would provide parks and preserves capable of accommodating the recreational needs of the District's future population.

Mitigation

Mitigation for community facility impacts (expressed as increased service needs) consists of the provision of additional community facilities, in accordance with current service standards and maximum acceptable response times. Local government will be responsible for financing the police force, fire protection, and educational facilities. In addition, it is anticipated that developer contributions will provide land, facilities, and equipment to meet some portion of the local service needs. The wide range of projects proposed under the EIP will provide extensive parks and recreation facilities for the new residents and workforce, and HMDC's planning review powers will require dedication of land for schools and other public facilities.

3.15 Transportation Impacts

Transportation system performance of the Preferred Alternative was evaluated using the existing Hackensack Meadowlands Transportation Model (HMTM). This model was developed specifically for the District. The HMTM is a computer-based planning tool that can be used to project future travel patterns and volumes based on assumptions regarding future land development patterns, future transportation system improvements and future travel behavior characteristics.

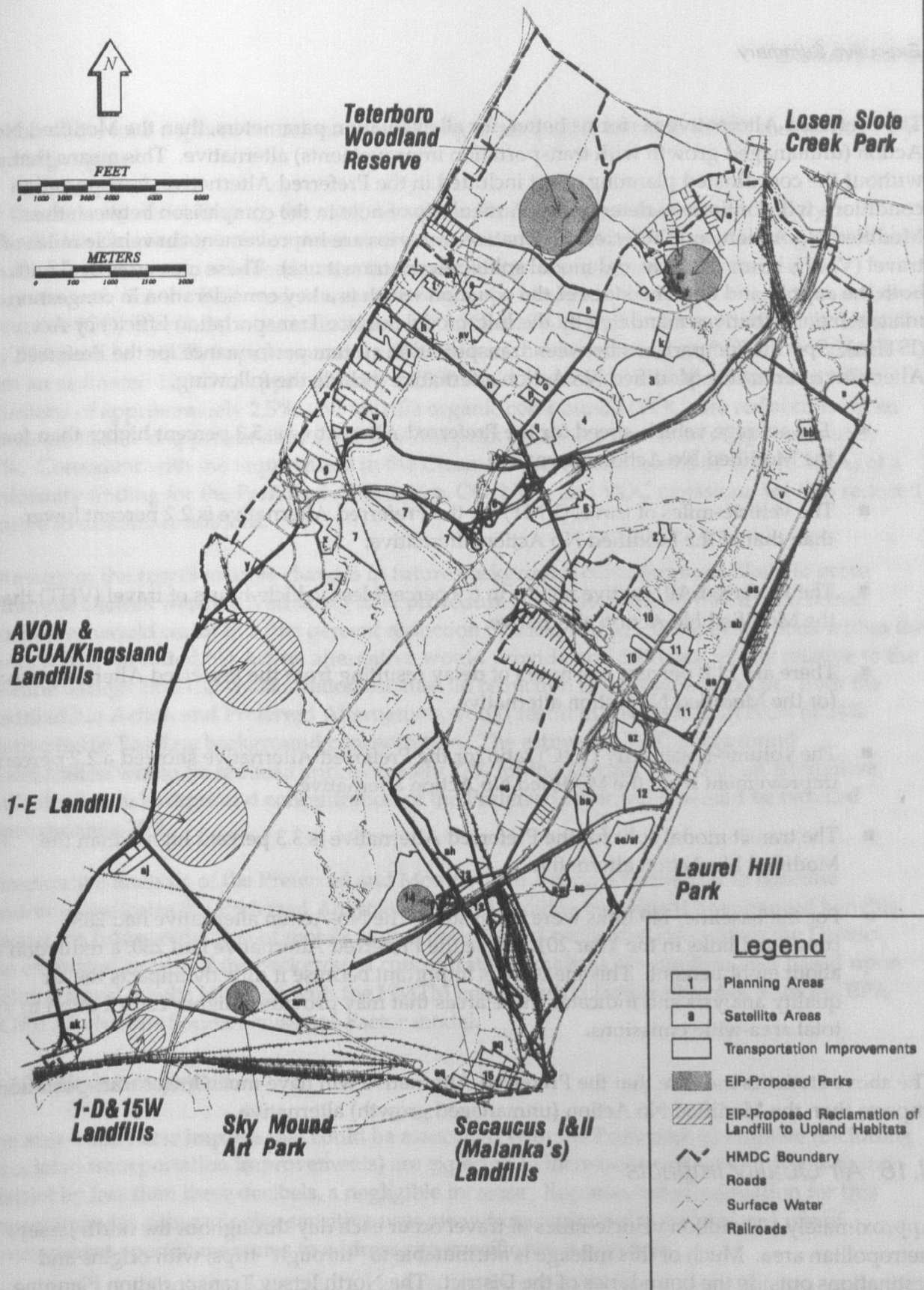
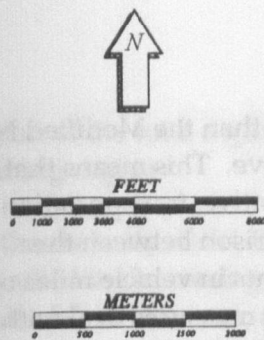


Figure ES-9
General Locations and Sizes of
EIP-Proposed Parks and Preserves

Executive Summary

The Preferred Alternative performs better, for all evaluation parameters, than the Modified No Action (unmanaged growth with transportation improvements) alternative. This means that, without the coordinated planning effort included in the Preferred Alternative, transportation conditions will continue to deteriorate. Particularly of note in the comparison between the Modified No Action and Preferred Alternative scenarios are improvements in vehicle miles of travel (VMT), hours of delay and modal split (percent transit use). These measures deal with both the supply and demand sides of the equation which is a key consideration in congestion management initiatives mandated by the Intermodal Surface Transportation Efficiency Act (ISTEA). Specific comparisons between transportation system performance for the Preferred Alternative versus the Modified No Action alternative include the following.

- The average vehicle speed for the Preferred Alternative is 5.3 percent higher than for the Modified No Action alternative.
- The vehicle-miles of travel (VMT) for the Preferred Alternative is 2.2 percent lower than that of the Modified No Action alternative.
- The Preferred Alternative results in 6.9 percent less vehicle-hours of travel (VHT) than the Modified No Action alternative.
- There are 11.8 percent less hours of delay resulting from the Preferred Alternative than for the Modified No Action alternative.
- The volume-to-capacity (V/C) ratio for the Preferred Alternative showed a 2.2 percent improvement from the Modified No Action alternative.
- The transit modal split for the Preferred Alternative is 3.3 percent higher than the Modified No Action alternative.
- For the baseline, 149 links were congested. The No-Action alternative had 283 congested links in the Year 2010 while the Preferred Alternative had 260, a reduction of about eight percent. This measure is important because it directly impacts the air quality analysis and indicates those areas that may provide a higher contribution to total area-wide emissions.

The above statistics indicate that the Preferred Alternative will have much lower transportation impacts than the Modified No Action (unmanaged growth) alternative.

3.16 Air Quality Impacts

Approximately 100 million vehicle-miles of travel occur each day throughout the north Jersey metropolitan area. Much of this mileage is attributable to "through" trips, with origins and destinations outside the boundaries of the District. The North Jersey Transportation Planning Authority (NJTPA) is the Metropolitan Planning Organization (MPO) responsible for air quality conformity throughout the region. The Hackensack Meadowlands District is a subplanning district within the NJTPA, and, as a special planning district of the NJTPA, represents only a

portion of the total regional emissions contributing to air quality impacts within the north Jersey planning region.

For the majority of the District, the most demonstrable emissions reductions are largely embodied in decreasing mobile source emissions estimates over the 20-year planning period as a result of fleet turnover, enhanced inspection and maintenance programs, anti-tampering programs, etc. For the Preferred Alternative versus the Modified No Action alternative, carbon monoxide (CO) is reduced from an estimated 113,562 lbs/AM peak hr to approximately 106,421 lbs/AM peak hr, a 6.3% improvement in CO emissions; oxides of nitrogen (NO_x) are reduced from an estimated 12,669 to approximately 12,350 lbs/AM peak hr, an improvement in NO_x emissions of approximately 2.5%; and volatile organic compounds (VOC) are reduced from an estimated 10,388 to approximately 9,757 lbs/AM peak hr, an improvement of approximately 6.1%. Consistent with the requirement in the Clean Air Act Amendments of 1990 (CAAA) of a conformity finding for the Preferred Alternative, CO, NO_x, and VOC emissions are also reduced relative to existing conditions.

Estimates of the representative changes in future background concentrations likely to occur within the District were derived using EPA procedures. Results indicate that the Preferred Alternative would result in a five percent reduction of background CO concentrations within the District. The Modified No Action alternative would provide no additional offsets relative to the Baseline background CO concentration because no reduction is estimated to occur. Both the Modified No Action and Preferred Alternatives would result in a reduction in NO_x of 24% relative to the Baseline background concentration. The estimated VOC background concentration would be reduced approximately 27% for the Modified No Action alternative while the future background concentration of the Preferred Alternative would be reduced approximately 29%.

Comparative analysis of the Preferred and Modified No Action Alternatives to Baseline conditions indicates the Preferred Alternative would provide equivalent or enhanced benefits toward the future reduction of mobile source background concentrations within the District. The estimated results of the background concentrations analysis are conditionally based upon regional travel results obtained with the HMTM and emission factors obtained with the EPA MOBILE5a Mobile Source Emissions Factor model.

3.17 Noise Impacts

The area-wide noise impacts that could be associated with the Preferred Alternative (including associated transportation improvements) are expected to increase *average* sound levels in the District by less than three decibels, a negligible increase. Recommended mitigation for this impact includes siting of noise-sensitive uses away from major noise sources and use of development-specific measures to address site-specific noise concerns.

3.18 Cultural Resources Impacts

A Stage 1A cultural resources survey was conducted to determine the potential cultural resources impacts from the various components of the Preferred Alternative. The specific goal of the expanded basin-wide archaeological and historical evaluation was to provide an appropriate planning tool to finalize, as needed, the parcel-specific Stage 1A cultural resource sensitivity study of known and potential prehistoric and historic localities in accordance with Section 106 compliance procedures (outlined in the National Historic Preservation Act of 1966), for each of the proposed development impact categories within the Hackensack Meadowlands study area.

Field reconnaissance and air photo based impact analysis resulted in the definition of a small set of potential archaeologically sensitive parcels that had little or no identifiable disturbance, and which therefore warrant additional investigation through detailed parcel-specific sensitivity studies and/or presence and/or absence testing. As a result of this historic impact analysis, procedures were formulated for identifying development areas with possible prehistoric and/or historic sensitivity, which demonstrated a potential for survival of artifacts. This process has resulted in the identification of eight Planning/Satellite Areas that warrant additional archaeological evaluation, two wetland mitigation areas that warrant further archaeological assessment, and 25 transportation improvements that warrant further archaeological study, due to the extent and diversity of the prehistoric and historic resources either adjacent to or in immediate proximity to the study areas. Of the eight selected Planning or Satellite Areas, two are recommended for Stage 1B (presence/absence of subsurface artifacts) testing only, and six have been recommended for both detailed parcel-specific Stage 1A (sensitivity) and Stage 1B (presence/absence subsurface) testing. The two mitigation areas warranting further investigation are prompted by the potential presence of a 19th century mill near one of the wetlands, and the potential for surviving historic elements relating to the Paterson Plank Road and the historic Paterson bridge within another wetland. The 25 transportation improvement corridors cannot be precluded from having potential prehistoric and/or historic sensitivity based on existing data, and as such are being recommended for detailed, route specific, Stage 1A sensitivity evaluations.

In addition to the need for subsequent archaeological evaluation of these historic parcels, the wetlands mitigation actions may potentially disturb wetlands that potentially contain undisturbed pollen sequences or records. These pollen sequences in these wetlands may provide information on the changes in the prehistoric and/or historic environment within the Hackensack Meadowlands. To assure that this information is not lost due to wetland mitigation, five discrete parcels have been identified to be investigated and documented through the use of controlled, radiocarbon dated pollen core samples prior to being subjected to any change, including mitigation work.

Coordination of, and methods for, future cultural resource study in the District (for SAMP-related projects) will be formalized in a Programmatic Memorandum of Agreement (MOA) between EPA, ACE, and NJDEP. This MOA will detail the future Section 106 (National Historic Preservation Act) compliance process to be followed by the SAMP partners.

The EIP will result in development of a comprehensive cultural resource management process, development of procedures to incorporate cultural resource issues into the land use review process, and implementation of a historic preservation ordinance. Each of these efforts will benefit the preservation of and the sensitivity to cultural resource issues in the District.

3.19 Solid Waste Impacts

Implementation of the Preferred Alternative will result in the generation of approximately 117,000 tons of solid waste each year (after the full build-out of the Preferred Alternative). This increase represents an increase of approximately 75 percent from existing in-District solid waste generation, because there are currently so few households in the District, and because solid waste generation from office uses is relatively low. Given that the increase in solid waste generation will gradually occur over the 20-year planning period, the increase is not expected to have a significant adverse impact on the capacity of the solid waste system to manage this waste through a combination of source reduction, recycling, composting, incineration, and landfilling. The solid waste generation in the District under the Preferred Alternative (117,000 tons/year) represents an increase of approximately five percent in the total solid waste generation (before recycling) of Bergen County (1.2 million tons/year) and Hudson County (910,000 tons/year).

Some of the areas identified for development in the Preferred Alternative overlie known or suspected solid waste disposal locations. Development in locations in which solid waste has been disposed of is an advantage insofar as such sites often provide non-wetland growth locations, use of which usually has fewer effects on natural resources. However, such locations require additional site engineering to provide stable foundations and control of leachate and gases.

The fact that solid waste disposal locations underlie some of the proposed Planning/Satellite Areas is not anticipated to preclude use of those sites. The best available information for Planning/Satellite Area locations indicates that the type of solid waste to be encountered in these areas is predominantly construction debris, and that disturbance of waste disposal locations that may exist within the Planning/Satellite Areas will not result in uncontrollable discharges of leachate or gases, primarily because the means exist to control such discharges.

In addition to the reclamation of landfills for upland wildlife habitat, the EIP will establish a program to remediate many of the solid waste impacts that have occurred in the District in the past. This will have a large positive impact on the overall environment of the District.

The program to be established by the EIP will use state-of-the-art landfill closure and remediation designs, including the control of leachate and landfill gas emissions from the currently unmanaged landfills in the District. Where possible, the closed landfills will be made available to the general public for passive and potentially active recreation activities.

3.20 Hazardous Waste Remediation Impacts

The process to develop the Preferred Alternative generally avoided use of sites known to be heavily contaminated by hazardous wastes, except two locations that are being remediated under existing state and federal remediation programs, the use of which are included in the Preferred Alternative. Thus, the combined impacts to contaminated site remediation in the District from the Preferred Alternative are not expected to be significant, assuming many sites will benefit from expedited remediation under the Environmental Improvement Program, and other sites will be properly controlled where construction disturbances may occur. Therefore, no major program for mitigation of impacts that might arise from disturbance of sites suspected of containing hazardous materials is necessary at the programmatic level.

Through the "Hazardous Sites Initiatives," the EIP will have a positive impact on contaminated site remediation activities in the District. The EIP will establish a program to improve the cleanup procedures and other regulatory efforts regarding contaminated site remediation activities within the District. The EIP initiatives will aid in contaminated site cleanup by prioritizing sites within the District and coordinating activities with appropriate government agencies. In addition, the EIP will establish a program to determine the feasibility of developing remediated contaminated sites in the District, while incorporating natural resource improvements as a condition of development.

Chapter 4

Implementation of the SAMP

In accordance with the goals of the MOU, the SAMP/EIS recommends implementation of several major regulatory and planning products. The regulatory and planning products include changes to regulations and project review procedures in the District, and changes in the administration of such regulations and review procedures. The principal regulatory products of the SAMP are:

- Adoption of a new Master Plan and Zoning Regulations for the District by HMDC. (The MOU calls for the creation of a Revised Master Plan for the District that “uses the EIS...to plan a land use configuration that, in addition to meeting HMDC’s planning purposes in the District, will satisfy the requirements of the 404(b)(1) Guidelines”.)
- Implementation of new site design and environmental requirements for projects submitted to HMDC for planning approval, including, for specified activities, requirements for best management practices for stormwater management, open space preservation, and maximum lot coverage allowances.
- Streamlined wetlands permitting under Section 404 of the federal Clean Water Act. (The MOU calls for consideration of a *General Permit* for specified activities consistent with the SAMP, as authorized under Section 404(e) of the Clean Water Act, and “restrictions on development...in agreed-upon areas of the District through...land use designation in the revised Master Plan and zoning amendments.” The MOU also calls for a joint processing agreement between ACE, EPA, and HMDC, such that “individual development proposals consistent with the revised Master Plan would not be subjected to additional project-by-project analyses of alternative sites...” with conditions. A joint processing agreement is implemented in the SAMP in the form of *Abbreviated Permit Processing procedures*, and will be available to projects that are consistent with the SAMP.)
- Establishment of a comprehensive Environmental Improvement Program for the District, with HMDC as the lead implementing agency. (The MOU cites “the parties’ commitment, through the SAMP process,...to ensure positive environmental gains for the District.”)
- Streamlining of the permit review process for a range of environmental permits applicable in the District that are under the authority of ACE, NJDEP, and HMDC. Proposed changes will be developed and implemented cooperatively between NJDEP and HMDC, and will be consistent with NJ’s Coastal Management Program.

Fundamentally, the SAMP is a *Plan*—a set of inter-linked actions (involving federal, state, and local agencies) to effect environmental enhancements in the District, while allowing a specific agreed-upon level of economic growth. The SAMP proposes specific future land uses for the undeveloped properties (and many developed properties) in the District, ranging from conservation, to remediation, to transportation improvement, to economic development.

Executive Summary

With respect to land development proposals, two basic project review tracks will be created. The first review track is available to projects that are consistent with the SAMP, and the second to those that are not. For reasons explained below, only projects that are consistent with the SAMP will be eligible for streamlined federal, state, and local project review processes.

The agency that will have the first line of responsibility for determining whether projects are consistent with the SAMP will be HMDC. The initial review will consider whether the project is consistent with: the SAMP; the Revised HMDC Master Plan; and the revised Zoning Map for the District. Review for SAMP consistency will include an identification of the relevant regulations that are expected to apply to a project so that the extent of permitting requirements are known by the sponsor of a project.

Projects that are not consistent with the SAMP will need to comply with standard permit application processes, and are not eligible for the streamlined review process. (The streamlined review process is available only to projects consistent with the SAMP because extensive studies regarding need, alternatives, environmental impacts, and mandatory mitigation have been performed for actions included in the SAMP.)

It is anticipated that projects that are not consistent with the SAMP will be difficult to implement if they require HMDC, state, and federal permit approvals. Because the Revised HMDC Master Plan will replace the existing Master Plan as an element of the NJ Coastal Management Program, projects that are inconsistent with the Revised Master Plan will, by definition, be inconsistent with the Coastal Management Program for NJ. Only projects that are consistent with the Coastal Management Program are typically eligible for federal or state agency permit approvals.

Activities not consistent with the SAMP will be regulated and/or precluded under existing regulatory authorities, such as (1) revised zoning and development review regulations being implemented by HMDC, (2) authorities exercised by NJDEP through review of consistency of the project with the NJ Coastal Management Program (under Section 307 of the Coastal Zone Management Act), (3) individual permit application review by ACE, and (4) potential future 404(c) actions by EPA where valuable aquatic sites are threatened.

4.1 Special Area Management Plan Components

The SAMP for the Hackensack Meadowlands consists of several components, as described below.

SAMP Components

1. ***Future Land Use Plan.*** A future land use plan (to year 2015) has been identified by HMDC, showing general locations that are proposed for conservation, environmental improvement, and development in the District. The future land use plan will be a component of HMDC's Revised Master Plan for the District, which will mirror the SAMP. The Land Use element of the Master Plan will identify general land use classifications and the areal location and extent of development activity. The SAMP/HMDC Master Plan planning period extends to the year 2015, but it is

anticipated that the land use plan developed in the SAMP constitutes the entire permissible build-out of the District. As is detailed below, the various mechanisms for protecting and conserving wetlands as part of the SAMP will result in the permanent protection of the remaining wetlands in the District at the end of the 20-year planning period (assuming full build-out of the Preferred Alternative). The Revised Master Plan will guide the development of a new Zoning Map and Zoning Regulations for the District. The Master Plan and Zoning Regulations are products of HMDC's planning authority in the District. The Master Plan will incorporate a new program for implementation of Transfer of Development Rights in the District (described in Section 6.1.4 of the EIS). A map showing the components of the Preferred Alternatives is presented as Figure ES-10.

2. ***Transportation Improvements.*** Proposed transportation improvement projects include road widening, railroad, and highway extension projects that maintain mobility in and through the District, and that seek to achieve air quality objectives for the region by reducing congestion and increasing availability of transit systems. There are 34 transportation improvement projects anticipated in the SAMP, ranging from minor road widenings to construction of new railways.
3. ***Mitigation Requirements for Unavoidable Impacts.*** Mitigation is required to compensate for regulated activities, especially those that will adversely impact wetlands. Specific mitigation recommendations are included in this EIS, and will also be required pursuant to HMDC's revised Zoning Regulations and Environmental Performance Standards. Several environmental mitigation issues will receive special attention:
 - (a) Wetland mitigation will be implemented pursuant to an Interagency Compensatory Wetland Mitigation Agreement. Participation will be invited from ACE, EPA, NJDEP, HMDC, NOAA, and USFWS, and will include specific provision for implementation of wetland mitigation banking in the District (see discussion of regulatory products below, and Section 6.2.2 of the EIS);
 - (b) Mitigation for non-point source runoff from projects in the District must be performed in accordance with the requirements of the EPA and NOAA Section 6217 Coastal Nonpoint Program (see Table ES-5), and relevant NJDEP regulations;
 - (c) Impact assessment and mitigation with respect to compliance with the National Historic Preservation Act will be conducted in accordance with a Memorandum of Agreement that will be negotiated among EPA, ACE, NJDEP, and HMDC; and
 - (d) Special measures to advance the conservation of Peregrine Falcon are proposed in accordance with Section 7a(1) of the Endangered Species Act, to

TABLE ES-5

EXAMPLE MANAGEMENT MEASURES FOR
SOURCES OF NONPOINT POLLUTION

I. Management Measures For Urban Areas

Reduce Runoff from New Development. Reduce suspended solids levels to no greater than predevelopment levels. Peak runoff rate not to exceed predevelopment levels.

Watershed Protection. Avoid conversion of erodible areas, preserve areas providing water quality benefits, and protect the natural integrity of waterbodies and natural drainage systems.

Site Development. Design sites to protect areas that provide important water quality benefits, limit increases in impervious area, and limit land disturbance activities.

Construction Site Erosion and Sediment Control. Reduce erosion and retain sediment onsite during and after construction.

Existing Development. Identify watershed pollutant reduction opportunities, and enhance buffers along surface waterways.

Pollution Prevention. Reduce discharge of pollutants into storm drains, and prevent improper storage, use, and disposal of household hazardous chemicals.

Road, Highway, and Bridge Runoff Systems. Implement controls for non-point pollutants.

II. Management Measures for Hydromodification

Instream and Riparian Habitat Restoration. Minimize the effects of channel modification on instream and riparian habitats to reduce undesirable impacts.

Management of Eroding Streambanks and Shorelines. Stabilize streambank and shoreline erosion, and protect streambanks and shorelines from erosion.

III. Management Measures for Wetlands and Riparian Areas

Protect Wetlands and Riparian Areas. Protect wetlands and riparian areas that serve a significant NPS abatement function, while protecting the other existing functions.

Restore Wetlands and Riparian Areas. Promote the restoration of the preexisting water quality improvement functions in damaged and destroyed wetlands and riparian systems.

IV. Monitoring of Management Measures

Monitoring to Assess Implementation, Operation, and Maintenance of Management Measures. Initiate sampling, data analysis, and the interpretation of results to assess the success of measures implemented to reduce pollution loads and improve water quality.

(Source: Guidance Specifying Management Measures for Sources of Nonpoint Pollution, EPA, 1993)

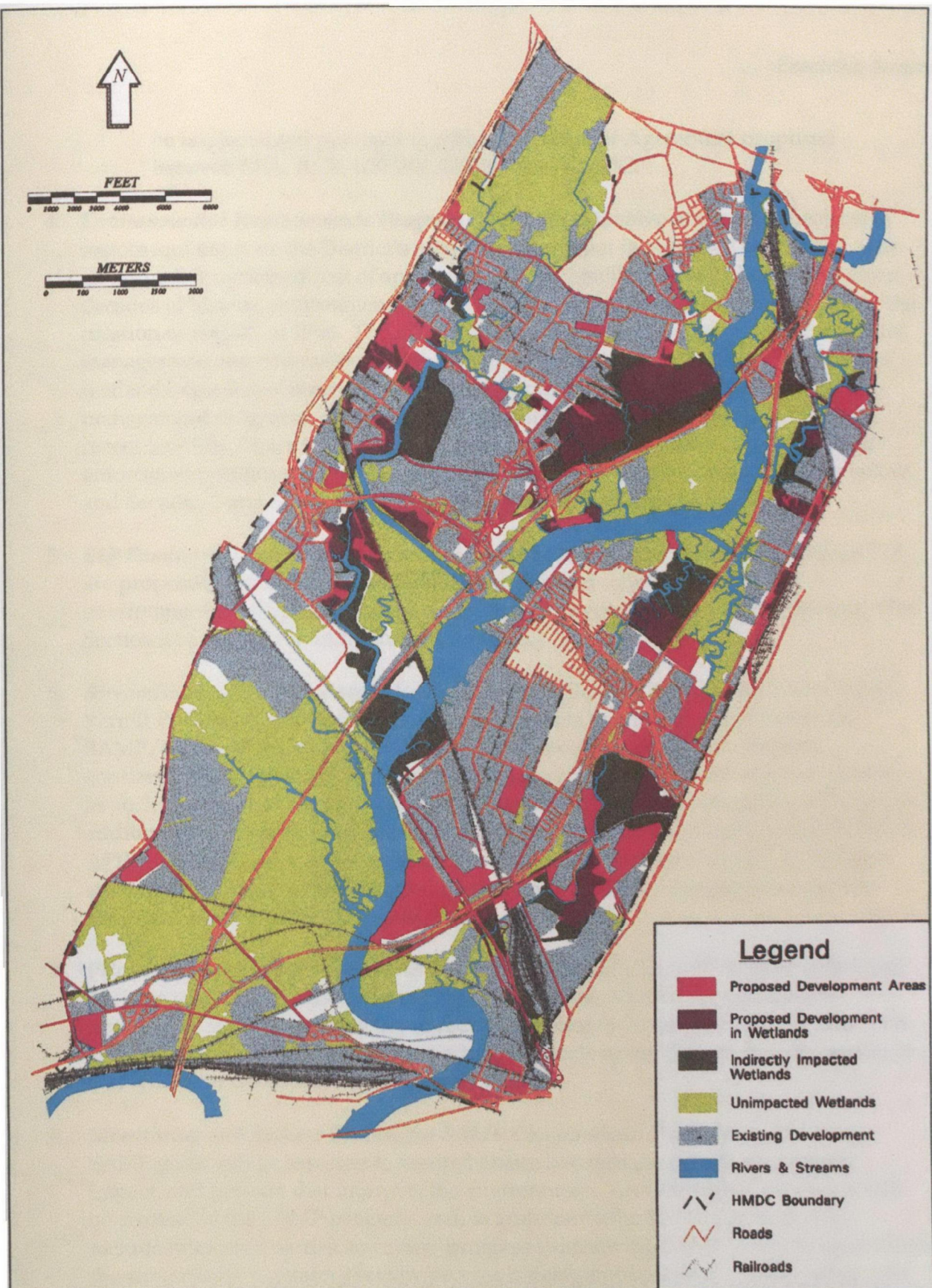


Figure ES-10
Land Uses Under the
Preferred Alternative

be implemented pursuant to a Memorandum of Agreement proposed between EPA, ACE, USFWS, NJDEP, and HMDC.

4. ***Environmental Improvements Program (EIP).*** An extensive portfolio of projects to restore and improve the District's natural environment is proposed by HMDC, with an estimated combined cost of approximately \$900 million. The EIP seeks to correct decades of historic environmental degradation that occurred in the District before the creation of HMDC in 1968. The EIP proposes a set of comprehensive environmental management and restoration efforts, including management of about 7,000 acres of wetlands, creation of six major new parks, implementation of transportation management programs, closure of nine landfills, landfill gas recovery at the more recent landfills, District-wide water quality monitoring, education programs, and enforcement programs. (See discussion of *Environmental Improvement Program* below, and Sections 2 and 6.1.6 of the EIS for additional information on the EIP.)
5. ***EIP Funding Mechanisms.*** Various mechanisms to fund the almost \$900 million EIP are proposed, including assessments on existing and new development, environmental linkage fees, and coordination of government funding programs. (See Section 2 of the EIS for additional information.)
6. ***Streamlining of the Regulatory Review Process.*** General Permits and Abbreviated Permit Processing will be implemented for projects that are consistent with the SAMP/Revised HMDC Master Plan, and that involve wetland fill. Projects consistent with the SAMP will have in place approved alternatives analysis, insofar as such analyses have been prepared for this EIS. Impact and mitigation analyses (in addition to those performed for the EIS) may be required for projects using the GP or APP. Such analyses will be tiered on the work performed for this EIS. In addition, streamlined permit review between HMDC and NJDEP will be implemented for projects consistent with the SAMP.
7. ***Pilot Program to Redirect Growth Out-of-District.*** HMDC will work to create and package various administrative support and existing NJ funding mechanisms designed to evaluate approaches to redirect development proposals in the District to urban areas, as an alternative to impacting wetlands in the District (see discussion of *Out-of-District Development Pilot Program* below).
8. ***Monitoring and Review Process for SAMP Components.*** Progress in achieving SAMP goals will be assessed to assure balance between projects that adversely impact, and projects that improve, the environment. An Oversight Committee will be created by the SAMP partners, and, in addition to the SAMP partners, may include interested parties, to review progress in achieving SAMP goals, to assure that the streamlined regulatory review process is being implemented appropriately, and to recommend adjustments in the implementation of the SAMP to assure that the principles of the SAMP MOU are met.

4.2 Revisions to HMDC Plans, Policies, and Procedures

HMDC Master Plan Revisions

The Master Plan for the District will contain the recommended future land use plan, specifying those locations recommended for economic growth and those areas recommended for conservation and environmental improvement. The Master Plan will include the following sections: Land Use Plan, Environmental Plan, Open Space and Recreation Plan, Transportation Plan, Housing Plan, and an Infrastructure Plan. The Master Plan will also identify locations where conservation and environmental improvement are proposed within the District. Conservation and environmental improvement locations recommended within the Master Plan will be consistent with those recommended in the SAMP/EIS. The Revised HMDC Master Plan will provide for conservation areas in the SAMP through a number of mechanisms, i.e., zoning changes, transfer of development rights, requirements for open space, etc.

Revisions to HMDC Zoning Regulations

The revised zoning regulations for the District (which will follow the adoption of a Revised Master Plan for the District) will establish zoned areas that allow land uses and activities that are consistent with the SAMP. A range of zoning approaches will be employed under the SAMP to permanently conserve wetlands in the District that are not already protected under existing conservation mechanisms. Currently, 27% of the wetlands in the District are protected as dedicated open space and by deed restriction. HMDC proposes to protect all wetlands that will exist in the District pursuant to full implementation of the Preferred Alternative¹¹, using a range of mechanisms. Five types of wetland preservation actions are proposed by HMDC, as follows:

1. Marshlands Preservation Zoning. HMDC proposes to expand the Marshlands Preservation zone to include a majority of the wetlands within the District. Wetlands under public and quasi-public ownership will be zoned as marshlands preservation areas (by revising the existing Zoning Regulations). The vast majority of such land will be designated for preservation purposes in the zoning regulations and zoning plan, resulting in designation of approximately 1,160 additional acres of land within the Marshlands Preservation zone. Although the SAMP involves no fill in major open waters (e.g., rivers and major tributaries) in the District, HMDC also proposes to conserve major open waters using Marshlands Preservation zoning authority, making such areas ineligible for development under HMDC regulations.

2. Open Space Requirements. Open space requirements, mandated under revised HMDC Zoning Regulations, will result in the preservation of wetlands where projects are extensively bordered by wetlands. Developers will be responsible for providing conservation easements or deed restrictions (thereby protecting such areas from future development), or dedicating preserved wetland areas to land trust organizations. Approximately 770 acres of wetland will be preserved in this manner.

¹¹ This will result in protection of 88% of the District's existing wetland inventory.

3. Lot coverage/FAR restrictions. Wetlands on properties that are now partially developed are, and will, continue to be protected through zoning and site plan regulation. Maximum lot coverage and floor area ratio (FAR) criteria will determine the maximum extent of development permitted on individual sites, thereby protecting the balance of the site open space areas from future development (using conservation easements and other mechanisms). Approximately 1,500 acres will be protected in this manner.

4. Transfer of Development Rights. Transfer of Development Rights (TDR) will be utilized to preserve approximately 500 to 775 acres of unprotected private wetland property. Under the TDR program, the owners of wetland property planned for development will need to purchase development rights from owners of property designated to be open space.

5. Wetland acquisition planned under EIP Program. HMDC's Environmental Improvement Program (EIP) proposes acquisition of approximately 250 acres of wetland, located primarily along the Hackensack River and consisting of scattered, privately held properties.

Table ES-6 lists the acreage of the wetlands in the District at present, as defined and delineated during the ACE/EPA Advanced Identification (AVID) of Wetlands in the Hackensack Meadowlands (1992). The criteria for the AVID focused on the protection of water quality, wildlife and fisheries habitat, and recreation and educational use. For this reason, and for hydrologic reasons, the wetland boundaries included, in many instances, substantial areas of open water (such as segments of the Hackensack River). The 8,530 acres delineated as wetland Assessment Areas for the AVID included 1,640 acres of open water, interconnected with 6,890 acres of wetland.

Table ES-6 also lists the acreages protected by each of the proposed zoning and other controls. Of the 6,890 acres of non-open water wetland in the District, approximately 12% (842 acres) will be converted to upland as part of the economic development anticipated by HMDC in the Planning Area, Satellite Area, and Transportation Improvement locations; approximately 27% (1,865 acres) are currently protected by conservation mechanisms (i.e., dedicated open space or deed restricted); and approximately 61% (4,183 acres) will be protected using the five conservation mechanisms described above. By the conclusion of the SAMP planning period (year 2015), 88% (6,048 acres) of the wetlands *now present* in the District (6,890 acres) plus an additional 45 acres of wetland that will be created, will be protected and managed. The objective of the SAMP is to provide protection to these wetlands in perpetuity.

As can be seen from Table ES-6, zoning mechanisms will be used to protect the largest share of wetland area. However, zoning controls do not provide the same assurance of permanent protection as does acquisition (because zoning regulations can be revised). Nevertheless, NJ planning law requires that the Zoning Regulations be consistent with the adopted Master Plan, and the Master Plan will clearly present HMDC's goal of preserving, in perpetuity, all remaining wetlands by the conclusion of the SAMP. The SAMP Oversight Committee will periodically review the implementation and success of the HMDC conservation actions. If some of the

TABLE ES-6

District Wetland Resources and SAMP Wetland Conservation Actions

District Wetland Resources	Acres	Line
Total area of aquatic sites ¹ (AVID Assessment Areas) in the District	8,530	1
Total area of open water within aquatic site boundaries	1,640	2
Total wetland area now present in the District (line 1 - line 2)	6,890	3
Wetland area to be converted to upland for P/SAs & TIs	842	4
Wetland area in District at conclusion of SAMP (line 3 - line 4 plus 45 acres of wetland created as part of mitigation requirements)	6,093	5
Wetland Conservation		
<i>Existing</i> Wetland Conservation Mechanisms		
Wetland already protected through deed restrictions, etc.	1,865	6
<i>Proposed</i> SAMP Wetland Conservation Mechanisms		
a. Wetland protected by Marshlands Preservation zoning	1,163	7
b. Open Space requirements per Zoning Regulation	770	8
c. Lot coverage/FAR restrictions per Zoning Regulation	1,500	9
d. Transfer of Development Rights ²	500	10
e. Wetland acquisition planned under EIP Program	250	11
Total additional conserved wetland area (sum lines 7 - 11)	4,183	12
Total protected wetland at conclusion of SAMP (line 6 + line 12 plus 45 acres of wetland created as part of mitigation requirements)	6,093	13
Total protected wetland and regulated open water at the conclusion of the SAMP (line 2 + line 13)	7,733	14
¹ Aquatic sites (assessment areas) were delineated for the 1992 ACE/EPA Advanced Identification (AVID) for the Hackensack Meadowlands, December 1992, and include important open water habitat adjacent to wetlands. ² The total wetland area protected by Transfer of Development Rights (TDR) may range between 500 and 775 acres, based on the TDR analysis presented in Appendix C of the EIS. P/SA = Planning/Satellite Area; TI=Transportation Improvement		

HMDC mechanisms to protect wetlands and open waters do not achieve the goals set herein, the SAMP Oversight Committee will expand the coverage of more successful mechanisms, or identify alternative controls to be implemented, either by HMDC through their regional powers, or by ACE and EPA through their respective authorities (e.g., Section 404 of the Clean Water Act, and Section 10 of the Rivers and Harbors Act of 1899).

Changes to the HMDC Development Review Process

HMDC will revise its development review process to better realize SAMP environmental goals. Revision of the development review process involves changes to HMDC's zoning regulations, development review regulations, site plan design standards, and environmental performance standards. The development review regulations will be expanded to specifically require Best Management Practices for all new development with non-point source discharges (e.g., storm water runoff), to meet the requirements of the Section 6217 Coastal Nonpoint Program to be adopted by NJDEP pursuant to the 1990 amendments to the Coastal Zone Management Act.

Wetland Mitigation Actions by HMDC

Requirements for wetland mitigation will be included in the proposed changes in HMDC's Zoning Regulations and plan review process. However, ACE has the principal authority for review and approval of wetland mitigation under Section 404 of the Clean Water Act. Thus, while provision for wetland mitigation will be incorporated into project review by HMDC as part of the planning process for the District, permission to implement wetland mitigation, and establishment of specific requirements for mitigation, proceeds mainly under federal law for the District. Nevertheless, to the maximum degree feasible under existing law, requirements for wetland mitigation, performance guarantees, maintenance, and monitoring will be incorporated into HMDC's Zoning and Development Review regulations. HMDC will promulgate and adopt requirements for wetland mitigation as part of its development review process.

Environmental Improvement Program

There is a need for substantial environmental remediation in the Hackensack Meadowlands District. The pollution and environmental destruction from previous decades of solid waste disposal within or adjacent to these wetlands is significant. Planning for the future of the District must recognize the remediation costs of long-standing and continuing cumulative impacts to wetlands and upland areas.

As noted earlier, HMDC, in concert with state and federal SAMP partner agencies, proposes to implement a comprehensive Environmental Improvement Program (EIP) for the District. The components of the EIP include solid waste management, surface and groundwater resource protection, environmental enforcement, air and land quality improvements, natural resource management and development of park, educational and recreational opportunities. Some EIP programs (and the implementation schedule of these programs) may be subject to change

Executive Summary

depending on the extent and timing of legislative amendments which may be required in some cases¹².

The following steps outline the proposed implementation of the EIP:

- (1) An EIP Advisory Committee will be established, including representatives of ACE, EPA, NOAA, USFWS, NJDEP, HMDC, two members of the general public who represent environmental advocacy groups, two members of the general public who represent the local development community, and two constituent mayors—one from Bergen County and one from Hudson County.
- (2) HMDC staff, on an annual basis, will list and prioritize EIP projects. The staff will develop a description of the projects, cost estimates, and funding sources, and provide an implementation schedule. Additionally, staff will identify measurements to assess the improvements yielded from the projects.
- (3) HMDC staff will present the priority list to the EIP Advisory Committee for its review, comment, and recommendations, and seek its members commitment to cooperate in the implementation of the projects.
- (4) The HMDC Executive Director will submit the annual EIP Plan to the full Commission as part of the annual HMDC final budget submission. Upon adoption of the plan by the Commission, the Executive Director will be empowered to implement the plan.
- (5) One hundred and fifty days after the annual plan has been completed, HMDC will perform an audit of the projects undertaken. HMDC will use an outside auditing firm to prepare the necessary reports indicating how EIP funds were allocated and spent.
- (6) HMDC will provide an annual report on its EIP accomplishments and indicate the benefits that will be and/or are derived.

Out-of-District Development Pilot Program

The out-of-District analysis concluded that no practicable alternative existed within the six county study region that would achieve SAMP goals. However, HMDC recognizes the need to assist in the revitalization of urban centers, especially in light of the fact that one of the HMDC member municipalities is an urban center (Jersey City). Moreover, the formulation of the out-of-District component of the SAMP provides a meaningful opportunity to test whether development can be redirected away from wetland areas that are under great development pressure in the District. If mechanisms to redirect some of the District's growth can be

¹² It should be noted that in some cases, legislative actions or amendments may be necessary in order to fully implement specific programs outlined in the EIP. It is the intention of HMDC to pursue any legislative action required to fulfill the EIP goals and objectives.

implemented, it is possible that out-of-District growth could achieve some of the in-District need for housing and employment. With this in mind, HMDC has agreed to create a pilot program as part of the SAMP to develop and test mechanisms that would redirect some growth to out-of-District urban locations.

NOAA Approval of Revised HMDC Master Plan and Zoning Regulations

Because the Revised Master Plan will replace the existing Master Plan as the coastal program element for the District, once the HMDC Master Plan and Zoning Regulations have been revised to incorporate the SAMP and the relevant NJDEP regulations, NJDEP will submit a program change request to NOAA for approval. Depending on whether the proposed revision is determined to be a substantial change to the enforceable policies or authorities of the NJ Coastal Management Program, it may be necessary to conduct a National Environmental Policy Act (NEPA) review on the program change request. HMDC's Revised Master Plan will serve as the coastal program element for the District for federal consistency review purposes once NJDEP has published notice of NOAA's approval of the program change. If any future revisions to the HMDC Master Plan and Zoning Regulations, or changes to the permitting structure, are needed subsequent to the SAMP-related Master Plan and permitting revisions, they will also be required to be submitted to NOAA as program changes.

4.3 SAMP Regulatory Products

The principal regulatory products of the Hackensack Meadowlands SAMP are Section 404 General Permits, Abbreviated Permitting Procedures, and a Revised HMDC Master Plan and Zoning Regulations for the District (changes to the planning process are summarized above). Concurrent with the regulatory changes listed above, a revised system is proposed for local (HMDC) and state (NJDEP) review and approval of projects consistent with the SAMP. Several other supporting regulatory products will be implemented, as related to wetland mitigation and wetland mitigation banking.

Section 404 Regulatory Products

Several regulatory changes are proposed by the SAMP that will improve the review process for projects that involve wetland fill in the District, *and that are consistent with the SAMP*¹³. HMDC's SAMP Development Plan proposes to allow the development of 52 Planning and Satellite parcels and 34 Transportation Improvements (for a total of about 1,860 development acres) over the next 20 years. Of these parcels, 22 of the Planning and Satellite Areas contain wetlands (potentially associated with a maximum of 750 acres of wetlands fill), and 17 of the Transportation Improvement locations contain wetlands (potentially associated with a maximum of 92 acres of wetland fill).

¹³ Generally, development projects are consistent with the SAMP if they are located within the footprint of one of the Planning or Satellite Areas, or Transportation Improvement Areas, and include provision for complying with mitigation and best management practices as described in the SAMP/EIS.

Executive Summary

The SAMP/EIS contains an evaluation of the need for economic growth and environmental improvement in the District; an analysis of alternative approaches to fulfill those needs; leading to the identification of a Preferred Alternative, and an evaluation of the environmental impacts associated with that Preferred Alternative. Planning and Satellite Area projects that are consistent with the SAMP have been shown, through the studies conducted for this EIS, to have no practicable alternatives with lesser overall environmental impact. Because an alternatives analysis has been conducted herein for the Planning and Satellite Area components of the Preferred Alternative, the NEPA and Section 404 requirements for analysis of practicable alternatives are now satisfied for such projects that are consistent with the SAMP. Based on these studies and evaluations, ACE and EPA have determined that Planning and Satellite Area projects that are consistent with the SAMP, and that meet other requirements (described below) will be eligible for streamlined federal permit review using two mechanisms:

- General Permits (GP)
- Abbreviated Permit Processing (APP) procedures

Projects eligible for GPs and APP are described below:

General Permits

- Proposed wetland fills that cumulatively total not more than 15 acres for Planning and Satellite Areas included in the Preferred Alternative *and* that are consistent with the approved SAMP/Revised HMDC Master Plan will be eligible for a GP. The GP applies only to projects in Planning Areas and Satellite Areas which alone, or in conjunction with other developers within the area, incur not more than 15 acres of fill, regardless of the current distribution of lot ownership within the Planning/Satellite Area boundary. Twelve Planning/Satellite Areas will be eligible for General Permits. Projects not eligible for a GP may be eligible for APP (see below).
- In addition, proposed wetland fills of no more than one acre, associated with identified minor Transportation Improvements to existing transportation facilities in the District, and that are consistent with the approved SAMP/Revised HMDC Master Plan, will be eligible for a GP. The draft General Permit identifies seven Transportation Improvements that will be eligible for General Permits.
- Projects for restoration and enhancement of wetlands in the District that are required for development activities authorized by the proposed SAMP General Permit, or projects to implement Mitigation Banks in the District that are consistent with the SAMP will qualify for a General Permit. Such projects must be located in areas identified for mitigation in the SAMP/EIS.
- The project must not result in significant adverse impacts to federal or state threatened or endangered species. (The SAMP/EIS has addressed the requirements for current federally-listed species. Presence of and use by state-listed species will be determined at the time of submittal of the GP application, as required by the conditions of the Water Quality Certificate proposed to be authorized for the GP.)

- The project must not result in significant adverse impacts to cultural resources, and otherwise complies with the provisions of the National Historic Preservation Act (NHPA). (The SAMP/EIS has identified sensitive locations requiring further survey/study work.)

It is anticipated that the GP will be consistent with the NJ Coastal Management Program (CMP). Similarly, it is expected that NJDEP will issue a 401 Water Quality Certificate for the GP. Based on the studies conducted for the SAMP/EIS, NJDEP proposes to issue Water Quality Certificates (WQCs) for projects authorized by the GP, conditioned to require, at minimum, additional investigation for state endangered, threatened, and rare species at the time of the requested use of the GP. With the above in mind, projects that proceed under the GP will not require a separate CMP review or WQC.

Abbreviated Permit Processing

- Proposed wetland fills that cumulatively total more than 15 acres within a Planning or Satellite Area *and* that are consistent with the SAMP would be eligible for APP.

Given that projects not eligible for the proposed GP involve greater wetland impact, and because of the programmatic nature of the SAMP/EIS, applicants proceeding under the APP will be required to collect additional site specific data under the APP, including information regarding the presence of state threatened and endangered species, cultural resources, and additional site specific information about the characteristics of and wildlife use of potentially impacted wetlands. Such information will be used to reach a permit decision, and will be used to better specify mitigation requirements (including wetland mitigation) associated with a permit approval.

Projects not consistent with the SAMP and HMDC's Revised Master Plan will undergo the individual Section 404 permit process, including preparation of an alternatives analysis, as appropriate and relevant. However, as noted earlier in this chapter, projects that are not consistent with the SAMP are likely to be difficult to implement if they require state and/or federal permit approvals. Because the Revised HMDC Master Plan will replace the existing Master Plan as the component of the NJ CMP applicable to the District, projects that are not consistent with the Master Plan will, by definition, not be consistent with the NJ CMP. Only projects that are consistent with the NJ CMP are typically eligible for federal or state agency permit approvals, notwithstanding the rights of project sponsors to apply for such permits.¹⁴

Procedures for Wetland Mitigation

The SAMP partners propose to implement an Interagency Compensatory Wetland Mitigation Agreement that will define the process for determining acceptable wetland mitigation under the

¹⁴ It is not possible for the SAMP to anticipate all projects that may be valuable or needed in the future of the District. However, as noted herein, projects that are not consistent with the SAMP Preferred Alternative will have a more extensive local, state, and federal review process, because they have not been subject to the advance studies performed as part of this EIS.

Executive Summary

SAMP. The Interagency Compensatory Wetland Mitigation Agreement, which is a SAMP regulatory product, will establish the Meadowlands Interagency Mitigation Advisory Committee (MIMAC). It is proposed that MIMAC include one wetland mitigation specialist, with authority to make decisions on behalf of the agency, from each of the following agencies: US Army Corps of Engineers, US Environmental Protection Agency; NJ Department of Environmental Protection; Hackensack Meadowlands Development Commission; National Oceanic & Atmospheric Administration; and US Fish and Wildlife Service.

Under the proposed agreement, MIMAC will be responsible for developing guidance for wetland mitigation projects to be implemented under the SAMP, including mitigation banks. MIMAC responsibilities include recommending mitigation actions for projects that are eligible for GPs and APP. The components of the guidance for wetland mitigation will include: site selection criteria; performance standards for conducting mitigation, including mitigation performed for mitigation banks; methodologies for assessing site success; criteria for the valuation and exchange of mitigation credits and debits; and monitoring requirements for wetland mitigation projects, including mitigation banks.

MIMAC will meet to review individual wetland mitigation project proposals and wetland mitigation bank proposals. Proposals for individual wetland mitigation projects and for banking sites will be submitted to MIMAC, including documentation of the need for the mitigation or banking site, evaluation of existing site conditions, and analysis of the feasibility of mitigation at the proposed location. MIMAC will make recommendations to ACE regarding the acceptability of: wetland mitigation site locations; wetland mitigation development plans (including restoration, creation, and enhancement); and wetland mitigation site selection, site designs, and operation and maintenance procedures.

Project sponsors applying for HMDC site plan approval will be required to implement wetland mitigation consistent with MIMAC procedures and determinations. Successful implementation of the mitigation project will be a permit condition, determined by fulfillment of site-specific criteria established for each mitigation site. To assure fulfillment of permit conditions, post-mitigation maintenance (as needed) and monitoring of the wetland mitigation project will be required, including preparation and submission of a monitoring report to MIMAC and federal resource agencies for not less than five years after the mitigation project is complete.

For the SAMP, it is proposed that wetland mitigation banking be authorized under the draft GP, to encourage early implementation of wetland mitigation efforts using banking systems.

Changes to Permit Responsibilities between HMDC and NJDEP

As part of the SAMP, specific permit review and approval responsibilities will be revised between HMDC and NJDEP. To effect this change, several NJDEP regulatory products will be pursued following the SAMP/EIS Record of Decision, as discussed below. For projects consistent with the SAMP, the goal is to create a review process whereby compliance with HMDC development review requirements will result in de facto compliance with relevant state requirements.

In order to streamline the permit review process, it is proposed that HMDC become the lead agency for permit review in the District¹⁵. To accomplish this, amendments must be made to the HMDC Master Plan and Zoning Regulations, NJDEP's Rules on Coastal Zone Management, and New Jersey's federally-approved CMP.

Upon issuance of the SAMP/EIS Record of Decision, HMDC would revise its Master Plan and Zoning Regulations to reflect the SAMP, and (working with NJDEP and NOAA) incorporate the appropriate Rules on Coastal Zone Management. Once the necessary revisions have been made, the Revised Master Plan and Zoning Regulations will be submitted to NOAA as a change to the NJ CMP. This is the first phase of a three-phase process to implement changes to permit responsibilities between HMDC and NJDEP.

During the period between the SAMP/EIS Record of Decision and NOAA's approval of the Revised Master Plan and Zoning Regulations as the coastal program for the District, a temporary, partial moratorium would be implemented by HMDC, contingent upon the approval of the Commission, in order for HMDC to prepare and adopt a revised Master Plan and Zoning Regulations. The moratorium would cover all new development proposed to be located on wetlands parcels, Planning Areas and Satellite Areas, with certain exceptions.

In the second phase, permit applications for projects in the District would be reviewed by HMDC staff using the Revised Master Plan and Zoning Regulations, which would include the relevant Rules on Coastal Zone Management as standards. The mechanism to initiate this process will be a Memorandum of Agreement between NJDEP and HMDC. HMDC's recommendations on permit decisions would be forwarded to NJDEP for approval, denial, or modification.

In the third phase of the permit review consolidation, a Programmatic General Permit for the District would be developed and adopted, after NJDEP receives NOAA's approval of the revisions to the Master Plan and Zoning Regulations. The Programmatic General Permit is intended to allow those activities described in the SAMP and to be adopted as amendments to the Master Plan to go forward without the need for additional project specific permits from NJDEP. The Programmatic General Permit will require revisions to the NJ CMP, which is initiated through a rule proposal by NJDEP. This further revision to the permitting process also must be submitted to NOAA for approval as a change to the NJ CMP. Once the Programmatic General Permit is approved by NJDEP and NOAA, HMDC will become the lead agency for state permit review in the District.

¹⁵ Under the state's federally-approved Coastal Zone Management Plan, three types of approvals may be needed before an applicant undertakes development projects in the District. They are a Waterfront Development Permit, a Water Quality Certificate, and a Federal Consistency Determination.

4.4 General Schedule for Implementation Actions

The SAMP will be implemented in a series of steps, with a logical sequence of regulatory changes occurring over approximately a one year period. SAMP implementation will be initiated upon the filing of the Record of Decision by the lead federal agencies for the EIS. The Record of Decision will adopt a specific SAMP alternative for the District (which is likely to include numerous components) as well as approve the proposed General Permit and Abbreviated Permit Processing procedures for activities consistent with the SAMP. The Record of Decision will describe the SAMP's consistency with the policies of the Coastal Management Plan for NJ.

The following sequence of SAMP implementation steps are anticipated¹⁶:

Immediate Actions

The SAMP partners and appropriate resource agencies finalize and approve the Interagency Compensatory Wetland Mitigation Agreement. The Meadowlands Interagency Mitigation Advisory Committee is created.

Federal agencies and SAMP partners finalize the APP procedures.

A SAMP Oversight Committee is established, to include representatives from the SAMP partners.

Contingent upon the approval of the Hackensack Meadowlands Development Commission, a temporary, partial moratorium would be implemented for all new development (as described in the SAMP Preferred Alternative) that is proposed to be located on wetland parcels, or Planning Areas or Satellite Areas, for a specified period of time (to be determined).

HMDC creates an EIP Advisory Committee.

Within One Year of ROD

HMDC revises and adopts a new Master Plan and Zoning Regulations for the District. NJDEP reviews the Revised Master Plan and submits it to NOAA as a program change to the NJ CMP. NOAA Reviews the revised Master Plan as a program change. Upon approval of the changes to the NJ CMP, the temporary moratorium on development is lifted.

HMDC and NJDEP approve permit processing procedures for the District. (HMDC prepares project permit reviews and submits same to NJDEP for NJDEP action on permit applications.)

¹⁶ The implementation schedule of some EIP programs may be subject to change, depending on the extent and timing of legislative amendments that may be required for some activities.

HMDC and NJDEP reach agreement on a General Programmatic Permit, that will allow HMDC to conduct streamlined permit reviews, with proper notice to NJDEP.

Following adoption of a new Master Plan and Zoning Regulations for the District by HMDC, HMDC implements a Wetland Bank, a Transfer of Development Rights System, and changes in the Development Review and Approval Process.

HMDC begins implementation of the Environmental Improvement Program.

HMDC initiates the pilot program for testing potential to redirect in-District growth to urban centers.

ACE, EPA, NJDEP, and HMDC enter into a Memorandum of Agreement regarding future cultural resources investigative efforts in the District.

ACE, EPA, USFWS, NJDEP, and HMDC enter into a Memorandum of Agreement regarding conservation actions to be implemented for the Peregrine Falcon to enhance the District's ability to support this species.

In accordance with the goals of Section 7a(1) of the Endangered Species Act, specific conservation measures to enhance use of the District by Peregrine Falcons are developed and implemented.

For more information on the purpose and need for the SAMP, the existing conditions in the Meadowlands District, the alternatives considered, the environmental impacts of the Preferred Alternative, and SAMP implementation activities, see the Draft Environmental Impact Statement on the Special Area Management Plan and related appendices.