Routes 202/35/6 Bear Mountain Parkway
Sustainable Development Plan

Linking Land Use and Transportation Decisions
March 2004

Consultant:

Edwards and Kelcey

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.

4. Title and Subtitle	5. Report Date
Routes 202/35/6 Bear Mountain Parkway Sustainable Development Plan	March 2004
	6. Performing Organization Code
7. Author(s) Various	8. Performing Organization Report No.
9. Performing Organization Name and Address Edwards & Kelcey 358 Broadway, Suite 303 Saratoga Springs, New York 12866	10. Work Unit No. (TRAIS)
	11. Contract or Grant No.
12. Sponsoring Agency Name and Address Westchester County Department of Planning 432 Michaelian Office Building 148 Martine Avenue White Plains, New York 10601	13. Type of Report and Period Covered
	14. Sponsoring Agency Code 1803, 1798, 1795

15. Supplementary Notes

16. Abstract

The Routes 202/35/6/Bear Mountain Parkway Sustainable Development Plan represents a consensus among the public as well as local, county, state and federal government participants on ways to: create more livable neighborhoods and communities, improve traffic flows in the study area, integrate transportation and land use decisions and improve interagency and intermunicipal coordination. There are five innovative aspects to this study - the collaboration of four levels of government - federal, state, county and municipal (including three municipalities at the local level) - to help resolve common issues; land use, transportation and environmental aspects and strategies were considered in a coordinated and comprehensive manner; .multiple roadways and modes of transportation were addressed as a system rather than as individual elements; the study allowed the regional Metropolitan Planning Organization (NYMTC), in concert with the other study partners, to identify specific transportation projects that should be advanced; and the study provided a major resource for use by the municipalities in the updating of their comprehensive plans and land use regulations. Preferred alternatives are identified through traffic and land use modeling. The Plan concludes by identifying implementation steps necessary to make the changes to future road facilities, travel patterns and land use to achieve the consensus vision of the future that the study identifies. An extensive community outreach process shaped the study and the recommendations set forth in the Plan.

17. Key Word	18. Distribution Statement
Sustainable Development, Land Use, Transportation	Westchester County Department of Planning 432 Michaelian Office Building 148 Martine Avenue White Plains, New York 10601

19. Security Classification (of this report)	20. Security Classification (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified		Free

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

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The preparation of this report has been financed in part through the U.S. Department of Transportation's Federal Highway Administration under U.S.C. Title 23, and the Federal Transit Administration, under the Transportation Equity Act for the 21st Century. This document is disseminated under the sponsorship of the Westchester County Department of Transportation in the interest of information exchange. The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Transit Administration, the Federal Highway Administration or the State of New York. This report does not constitute a standard, specification or regulation.

This project (WEST-11-99) was funded through matching grants from the Federal Highway Administration under PT2718912 and PT2719913, and from the Federal Transit Administration under PT271980W.

ROUTES 202/35/6
BEAR MOUNTAIN PARKWAY
SUSTAINABLE DEVELOPMENT PLAN

MARCH 2004

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I. INTRODUCTION

The Routes 202/35/6/Bear Mountain Parkway Sustainable Development Plan represents a consensus among the public as well as local, county, state and federal government participants on ways to:

- create more livable neighborhoods and communities
- improve traffic flows in the study area
- integrate transportation and land use decisions and
- improve interagency and intermunicipal coordination.

The planning process was initiated in spring 2000 as a partnership between the City of Peekskill, the Town of Cortlandt, the Town of Yorktown, Westchester County, the New York Metropolitan Transportation Council (NYMTC), the New York State Department of Transportation (NYS DOT) and the US Department of Transportation Federal Highway Administration. These agencies established a study Steering Committee on which each had a representative. The firm Edwards and Kelcey was selected as the consultant for the study.

The Plan is the result of a sustainable development study, one of four such pilot studies conducted nearly concurrently in the New York Metro area. The study area was identified by local municipal planners and by NYMTC's Regional Transportation Plan as an appropriate target for this new approach to transportation planning due to increasing traffic congestion, development pressures, environmental concerns and the complexity of identifying transportation improvements acceptable to the communities. The local municipalities agreed that they wanted to participate in a pilot study.

There are five innovative aspects to this study. First, it involved the collaboration of four levels of government - federal, state, county and municipal (including three municipalities at the local level) - to help resolve common issues. Second, land use, transportation and environmental aspects and strategies were considered in a coordinated and comprehensive manner. Third, multiple roadways and modes of transportation were addressed as a system rather than as individual elements. Fourth, the study allowed the regional Metropolitan Planning Organization (NYMTC), in concert with the other study partners, to identify specific transportation projects that should be advanced. And fifth, the study provided a major resource for use by the municipalities in the updating of their comprehensive plans and land use regulations.

It is important to note that it is unlikely that the major transportation improvements recommended in this study would receive state or federal funding without the cooperative approach that has been taken by the study partners. The cooperation is anticipated to be rewarded with

priority consideration for funding of this Plan's recommendations.

Prior to this study, corridor studies in the Hudson Valley typically focused on identifying solutions for single highways using traffic forecasts based on existing land use policies. Consideration was generally not given to changing land use policies in order to alter future traffic patterns and demand. The Route 35 Corridor Study (1987-1989) conducted by Westchester County and the Routes 202/35 Corridor Study for the towns of Cortlandt and Yorktown completed by the NYS State Department of Transportation in the 1980s are two such examples.

The Sustainable Development Plan includes in Chapter I: a description of the study area; a summary of concerns, issues and suggestions identified by agencies, residents and business owners; the study's objectives as agreed to by the agencies and the public participants; and a description of the unique planning process that the study employed. Chapter II presents existing conditions pertaining to the road system and traffic conditions, travel patterns, land use, the physical environment and development potential. Chapter III identifies the short term action projects that were undertaken by the study participants while the plan was being developed. These projects addressed immediate issues that were identified by the public. Chapter IV describes the land use and transportation alternatives that the study considered and the analytical modeling that was used to help the study participants identify and arrive at preferred alternatives. Chapter V presents the recommended implementation steps to make the changes to future road facilities, travel patterns and land use that the study identified as a consensus vision of the future.

Throughout this Plan, reference is made to the extensive community outreach process that shaped the study and the recommendations set forth in this Plan.

A. STUDY AREA

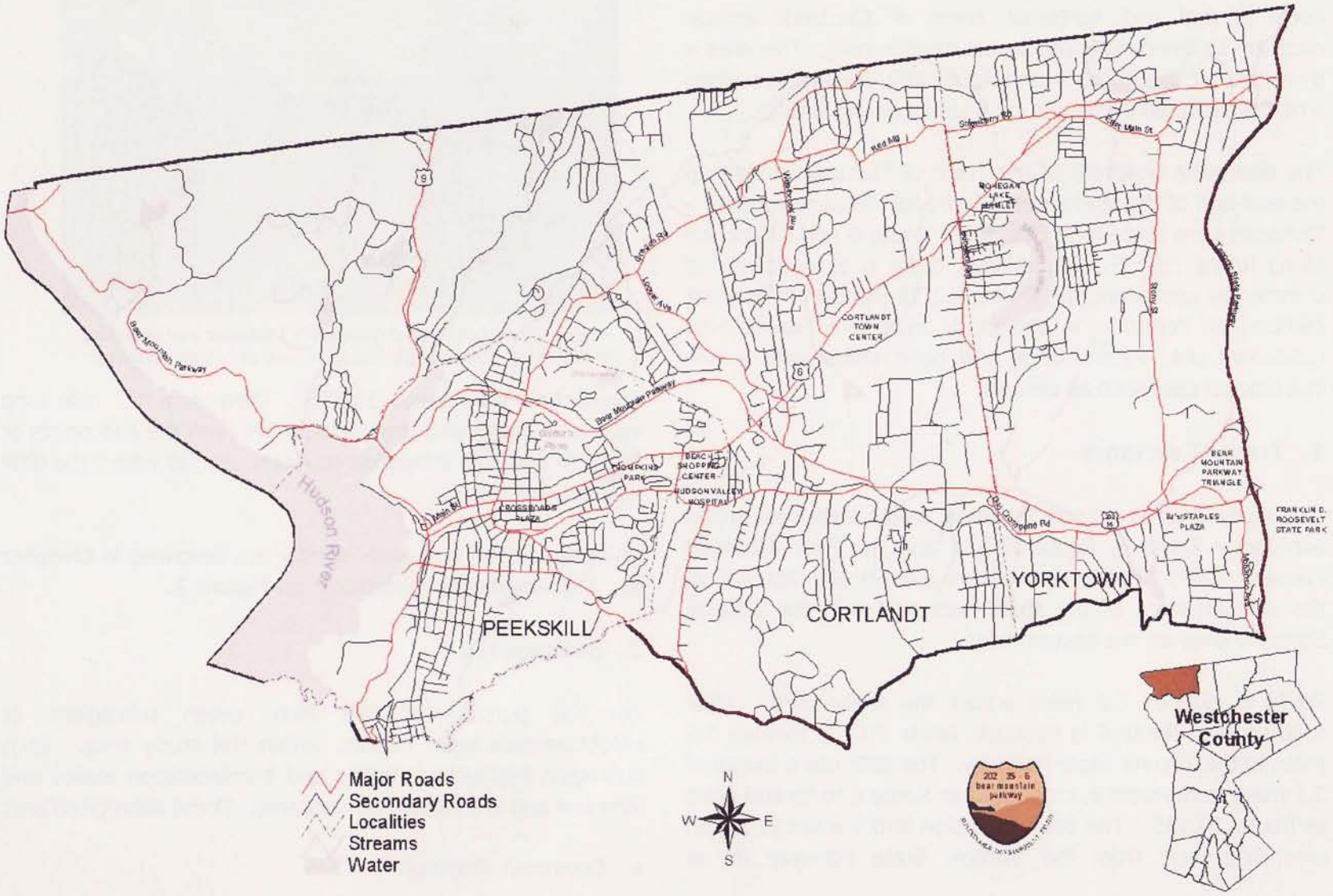
The study area encompasses approximately 40 square miles and is home to approximately 91,000 residents. It is located in the northwest corner of Westchester County bordered by the Hudson River on the west, Putnam County to the north and the Taconic State Parkway on the east. See **Figure 1**. Mid-town Manhattan in the City of New York is located approximately 40 miles south of the center of the study area.

The extent of the study area was based on the US Census Blocks that would incorporate all of the roads to be studied. Census Blocks allow a computer to model transportation analysis zones in a transportation demand model and to compute an analysis of the full buildout potential of the land and its affect on traffic.

The entire City of Peekskill is included in the study area at its west end. The city has an historic downtown and the highest density of land uses in the study area. Peekskill is bounded on the north, east and south by the Town of Cortlandt.

The northern half of the Town of Cortlandt is included in the

Figure 1. Study Area



center of the study area. The northwest portion of the town contains a military reservation, extensive areas of permanent open space and low-density residential development. The north central and northeast areas of Cortlandt include medium- to low-density residential development. This area is traversed by the Route 6 and Route 202/35 corridors along which are located numerous commercial developments.

The northwest quadrant of the Town of Yorktown makes up the east end of the study area. Three hamlets are included – Mohegan Lake and Shrub Oak along Route 6 and Crompond along Route 202/35. In addition, there is a broad mix of commercial uses along the Route 202/35 corridor. The other sections of Yorktown in the study area have low-density residential use, vacant lands and open space with a few institutional uses such as schools.

1. Travel Corridors

The study area is served by three major east-west travel corridors - Route 6, Route 202/35 and the Bear Mountain Parkway (BMP). The three corridors connect with Route 9 on the western edge of the study area and with the Taconic State Parkway on the eastern edge.

Route 6 extends 6.2 miles across the study area. After splitting from Route 6 in Peekskill, Route 202/35 extends 5.5 miles to the Taconic State Parkway. The BMP has a length of 3.1 miles from Route 9, crossing over Route 6 to its end point at Route 202/35. The BMP Extension is 0.9 miles in length extending west from the Taconic State Parkway to an intersection with Route 202/35. There is a 1.7 mile long vacant reserved land area located between the end points of the BMP and BMP Extension on Route 202/35 where the BMP was not constructed.

Preserving and enhancing community character and improving traffic movement through Mohegan Lake are major concerns.

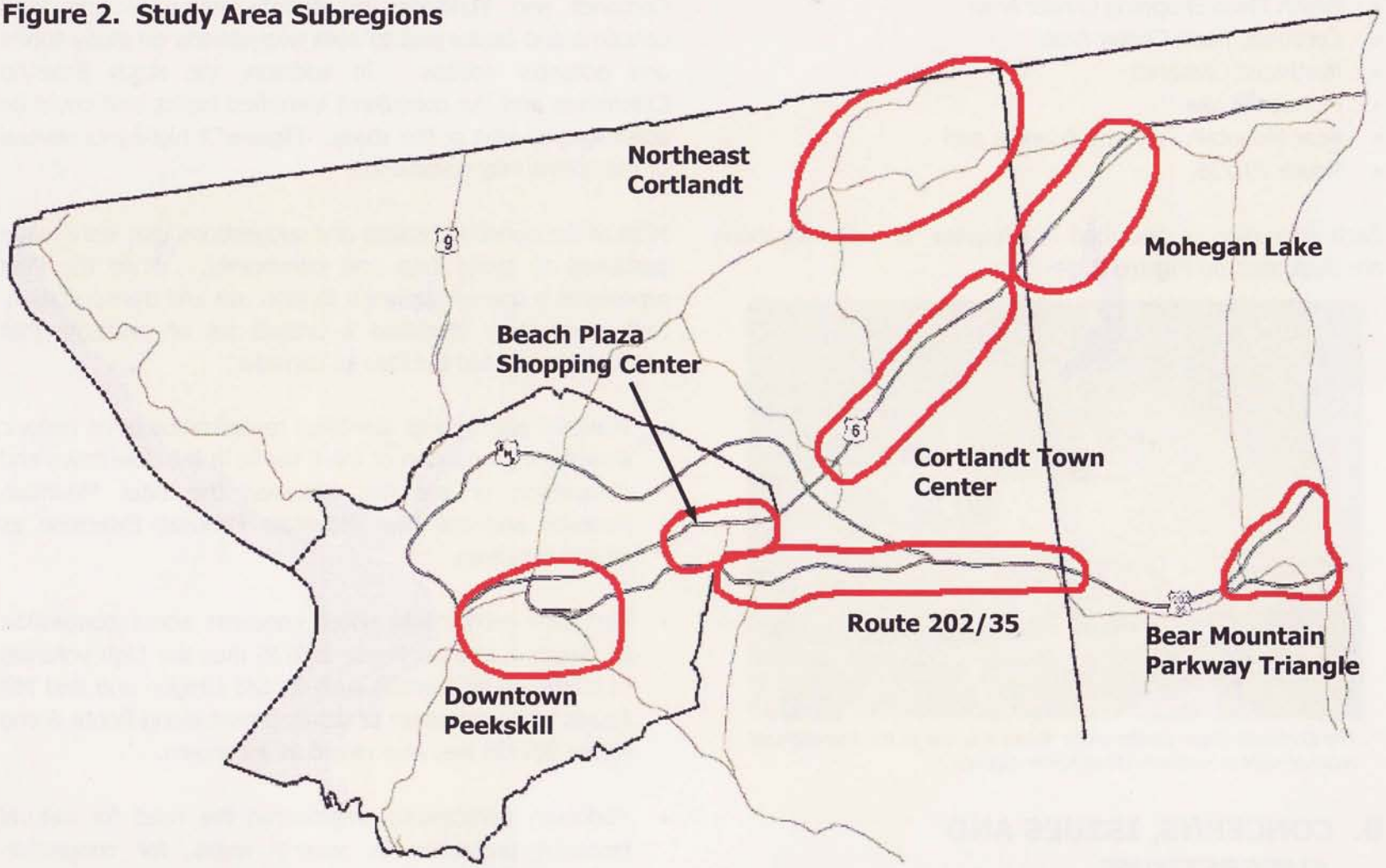
The characteristics of each corridor are described in **Chapter II**. The locations are illustrated on **Figure 2**.

2. Subregions

For the purpose of this Plan, seven subregions or neighborhoods were defined within the study area. Each subregion has unique traffic and transportation issues and land use and environmental concerns. These subregions are:

- Downtown Peekskill

Figure 2. Study Area Subregions



- Beach Plaza Shopping Center Area
- Cortlandt Town Center Area
- Northeast Cortlandt
- Mohegan Lake
- Bear Mountain Parkway Triangle and
- Route 202/35.

Each subregion is described in **Chapter II**. The locations are illustrated on **Figure 2**.

The Cortlandt Town Center along Route 6 is one of the few regional retail centers in northern Westchester County.

B. CONCERNS, ISSUES AND SUGGESTIONS

Early in the planning process (May and June 2000), a series of workshops and public meetings were held in Peekskill, Cortlandt and Yorktown to identify area-wide and local concerns and issues and to seek suggestions on study topics and potential actions. In addition, the study Steering Committee and the consultant identified topics that could be addressed as part of the study. **Figure 3** highlights several of the community comments.

Most of the concerns, issues and suggestions that were made pertained to more than one community. While the Plan represents a shared approach to land use and transportation, each community identified a unique set of concerns that participants wanted the Plan to consider.

- Peekskill participants identified revitalization of its historic downtown, reduction of truck traffic in the downtown and completion of the link between the Bear Mountain Parkway and the Bear Mountain Parkway Extension as critical concerns.

- Cortlandt participants noted concerns about congestion on Route 6 and on Route 202/35 plus the high volumes of traffic on local roads such as Old Oregon and Red Mill Roads. The character of development along Route 6 and Route 202/35 was also raised as a concern.

- Yorktown participants emphasized the need for natural resource protection in several areas, for congestion management along Route 202/35 and along Route 6 and for an alternative to strip development along Route 202/35. They also identified a need to enhance the community character and economic development of

Mohegan Lake and to address the potential for a Mohegan Lake bypass that could extend to near the Cortlandt Town Center.

1. Transportation

Transportation concerns were identified in four categories that interrelate – traffic, goods movement, transit and pedestrian/bicycle needs.

Traffic

Concerns were raised by participants that:

- Many intersections are congested.
- Local streets, such as Strawberry Road, are being used as a main through route for Putnam Valley and Cortlandt traffic to reach the Taconic State Parkway and other destinations.
- Growth in Putnam Valley (the town in Putnam County that is adjacent to the study area on the north) is contributing to increased traffic on local roads such as Red Mill Road in northern Cortlandt and Foothill Road in Yorktown.
- The lack of shared parking and of connections between business and retail centers creates congestion and traffic conflicts.
- The numerous curb cuts along Route 6 and Route 202/35 contribute to the traffic problems along these roadways.

Suggestions were made to construct several new roadways to relieve traffic congestion:

- Build a 1.7 mile limited access two-lane Bear Mountain Parkway Connection between the current Parkway terminus at Route 202/35 in Cortlandt and the Bear Mountain Parkway Extension terminus in Yorktown.
- Build a Route 6 bypass to the north of Mohegan Lake to alleviate congestion in that hamlet along Route 6.
- Extend Lexington Avenue north into Putnam County to reduce traffic on local roads in the northeast quadrant of Cortlandt.
- Provide a new north/south connection between Route 6 and Route 202/35.

Participants requested that the study specifically address strategies that would link the rate of development to road capacity.

Goods Movement

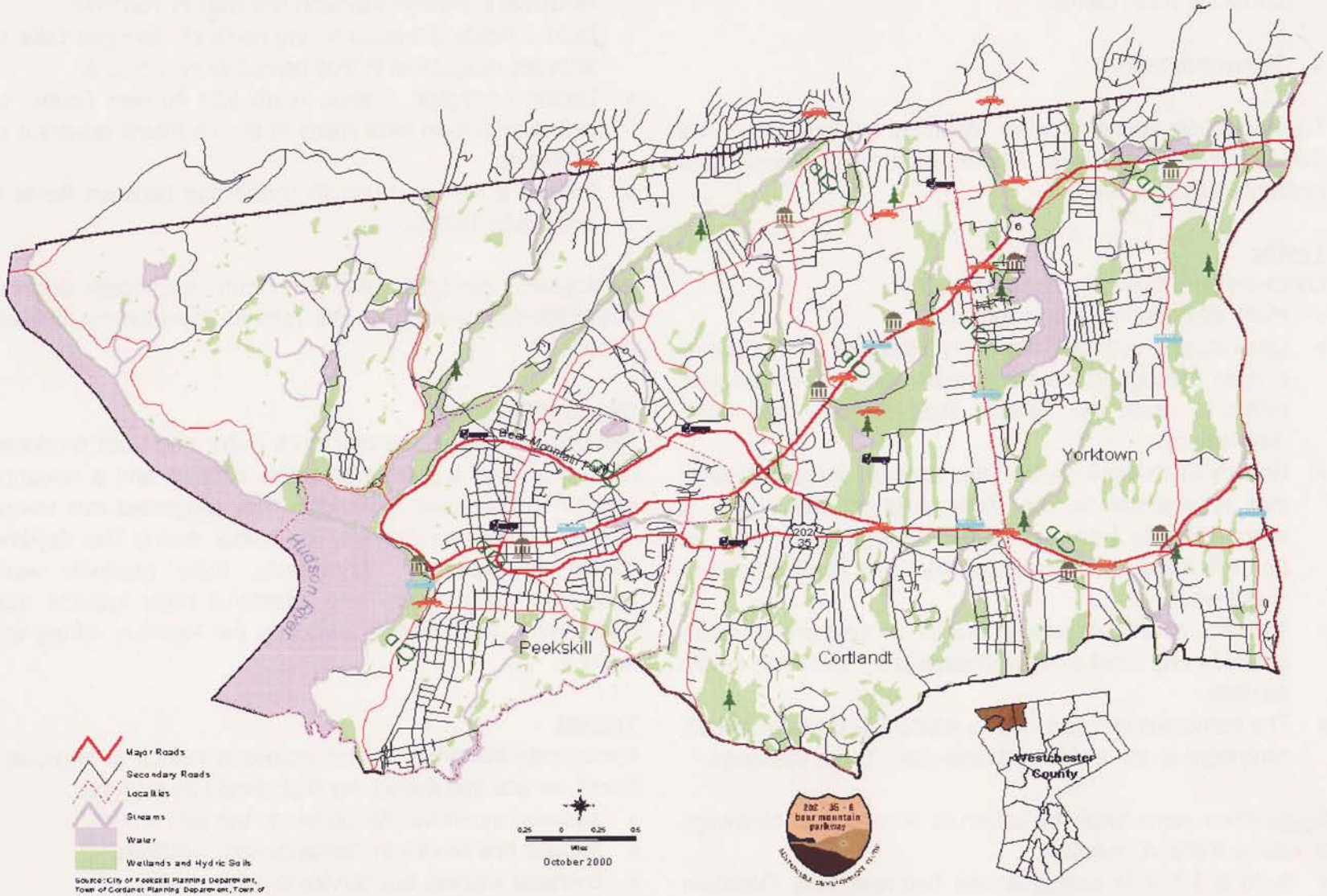
Participants commented that truck traffic and truck produced noise represent a pedestrian safety concern and a nuisance concern in downtown Peekskill. They suggested that use of the Bear Mountain Parkway by trucks during the daytime should be explored. Conversely, some residents were concerned about safety and additional noise impacts that might result from adding trucks to the Parkway during the daytime.

Transit

Participants identified several strategies related to improving transit service and transit use that should be explored:

- Increase incentives for people to use bus service.
- Expand bus service in Cortlandt and Yorktown.
- Increase express bus service to White Plains.

Figure 3. Community Concerns, Issues and Suggestions



Examples of Concerns, Issues and Suggestions Raised by Study Agencies, Area Residents and Business Owners

Auto Traffic
- Traffic congestion along Route 6 and Route 202/35
- Need for north-south connection between Route 6 and Route 202/35
- Traffic to and from Cortlandt Town Center
- Local streets used as short cuts between major roads
- Putnam Valley growth con tributes to traffic problem
- Too many curbs cuts on Route 6 and on Route 202/35
- Impact of Route 9 bridge improvements on surrounding area
- Road improvements have not keep up with development

Truck Traffic
- Truck traffic in downtown Peekskill
- Trucks illegally traveling on residential streets
- Lack of direct north/south route to Cortlandt Town Center

Transit
- Increase incentives to take the bus
- Expand bus service in Cortlandt and Yorktown
- Increase express bus service to White Plains
- Increase the number and use of park and ride facilities
- Enhance bus stop facilities
- Provide more bus turn-out lanes at bus stop locations
- Improve coordination of bus and train schedules

Pedestrian and Bicycle Use
- Poorly marked crossings in downtown Peekskill
- Lack of signals and crosswalks at school locations
- Lack of sidewalks and bike lanes along major highways
- Poor access to off trail road systems
- Pedestrian and bicyclist needs not fully considered in highway design

Community Character
- Poor design/landscaping on commercial properties
- Signage needs to be toned down and made more uniform
- Avoid repeating Route 6 development patterns on Route 202/35
- Create neighborhood "centers"
- Connect downtown Peekskill with waterfront
- Commercial and residential land use conflicts
- Establish and connect destinations
- Increase sensitivity to rural and historic character of the area
- Protect the rural landscape and natural environment of the area

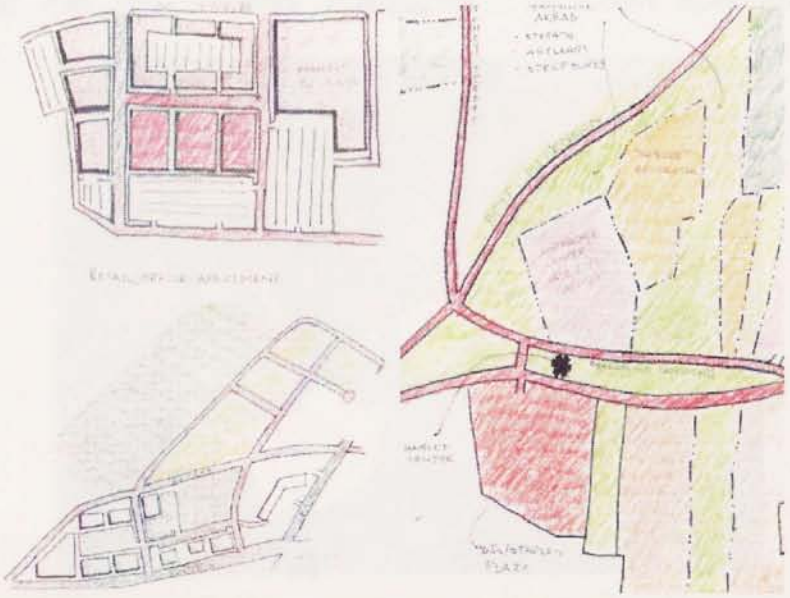
Natural Resources
- Protect Hunterbrook and Hollowbrook streams
- Protect sensitive lands along the Bear Mountain Parkway
- Avoid developing large wetland areas
- Monitor the Oregon Road and Mohegan Lake watersheds
- Protect Peekskill water supply from impervious surface runoff

- Increase the number of park and ride facilities and encourage greater use.
- Enhance bus stop facilities.
- Provide more bus turn-out lanes at bus stop locations.
- Improve coordination of bus and train schedules.

Pedestrians and Bicycle Use

Residents expressed interest in being able to ride bicycles to local destinations such as parks, schools, extracurricular activities and shopping centers. Areas of exploration for improving pedestrian and bicycle facilities identified were:

- Improve access to off-road and Westchester County trail systems.



Sketches from residents at a public meeting during brainstorming session on topics of concern.

- Increase and strengthen the focus on pedestrian and bicycle accommodations in the design of transportation facilities.
- Improve pedestrian crossings, particularly in downtown Peekskill.
- Provide more sidewalks for pedestrians.
- Provide adequate shoulders for bikers along the major roadways.

2. Community Character

Participants noted that they would like to see an improvement in the aesthetics of the study area along with increased respect for the remaining rural character and for historical resources. Participants identified the lack of consistency in style and character of commercial properties as a concern. Areas that were suggested for exploration included:

The relocation of truck traffic in Downtown Peekskill to the Bear Mountain Parkway was frequently discussed.

Participants in an initial workshop to identify major concerns and issues to be addressed in the study.

- Draft new design guidelines and design standards for non-residential development.
- Improve landscaping of commercial areas.
- Address the size and uniformity of commercial signage
- Create design overlay districts and natural resource regulatory overlays that could span municipal borders.
- Establish mixed-use centers that combine activities and create a sense of community.
- Provide better connections between shopping areas and residences for pedestrians, bicyclists and transit users.
- Provide better connections within and between centers.

- Protect residential areas located adjacent to commercial areas.

3. Natural Features

Many participants stated that they moved to the study area due to its natural setting. The participants suggested that the study and its recommendations be mindful of several environmental factors and conditions:

- Transportation improvements and development projects should be evaluated to determine potential environmental impact.
- Lands that contain steep slopes and wetlands should be protected; development should be directed to areas with minimal environmental constraints.
- Actions that negatively impact the environmental quality of the Peekskill Hollow Brook and its watershed, which provides Peekskill's drinking water supply, should be restricted.
- Sections of the area to the north of Route 202/35, within the Bear Mountain Parkway right-of-way, are environmentally sensitive with wetlands, aquifer and a trout stream; any plan to complete the Parkway or to widen Route 202/35 will need to recognize and mitigate against potential harm to the environment.
- A significant portion of the area between the Taconic State Parkway and Stony Street contains wetlands and should continue to be protected.
- Actions that impact the Oregon Road area and the Mohegan Lake watershed basin should be monitored for environmental impact.
- Runoff from impervious surfaces needs to be properly treated to protect water quality.
- Transportation improvements and development projects proposed within the Croton Watershed section of the study area will need to take into consideration the recommendations of the Croton Plan.
- Natural resource protection overlay districts that could span municipal boundaries should be considered.

C. CONSENSUS OBJECTIVES

This Plan represents a three year long working partnership of local elected officials and staff, community stakeholders, county and state agencies, representatives of local businesses and interested residents. All parties participated together in Stakeholder Committee meetings and public workshops of all types. As a result of this process, a consensus was reached on the following sustainable development objectives:

1. Maximize the efficiency of the existing transportation network by completing short-term actions, implementing smaller scale construction projects, improving transportation services and improving land use management.

2. Initiate planning for major construction projects.

3. Develop hamlet-type centers along Route 6 in Cortlandt

Redevelopment of the Crossroads Plaza in Downtown Peekskill was identified as an opportunity to improve the area's vitality.

and at the Bear Mountain Parkway Triangle in Yorktown.

4. Revitalize historic downtown Peekskill.

5. Improve community character along Route 202/35 and Route 6.

6. Protect unique natural resources and scenic areas.

7. Continue collaboration among the study partners.

8. For Peekskill, reduce adverse truck traffic impacts in downtown Peekskill and improve regional highway connections to the downtown.

9. For Cortlandt, improve access and congestion management, protect community character and ensure watershed protection.

10. For Yorktown, emphasize natural resource protection congestion management and enhancement of the neighborhood and traffic considerations in Mohegan Lake.

D. PLANNING PROCESS

The sustainable development study process that led to the drafting of this Plan was based on a committee structure designed to include wide representation, the orderly completion of specific steps and tasks and the production of technical and informational reports at key stages of the process.

1. Committee Structure

To ensure ongoing community involvement and collaboration during the study, both a Steering Committee and a Community Stakeholders Committee were created.

The Steering Committee consisted of representatives from all partners undertaking the study. The Committee directed the planning process and reviewed all products produced. The Steering Committee members are identified in **Appendix A.**

The Community Stakeholders Committee brought together

residents of many neighborhoods, local business owners, land developers and other parties with key interest in the future of the study area. Also serving on the Committee were representatives of local planning boards, comprehensive plan update committees, Peekskill City Council and the Cortlandt and Yorktown Town Boards. There were 15 to 20 "stakeholders" from each municipality. The Stakeholder Committee provided insight on all subjects explored during the study including the definition of the preferred future scenario presented in this Plan. This committee served as an effective "sounding board" for products of the study and for strategies to implement the preferred vision.

To supplement the work of the two committees, a series of municipal workshops and focus group meetings were held to solicit feedback from additional residents and business owners throughout the study process.

The full schedule of Stakeholder Committee meetings, workshops and focus groups is provided in **Appendix B**.

2. Steps and Tasks

The planning process that led to this Plan included the following steps and tasks:

Issues Definition

The initial steps in the study were to inventory existing conditions and to define critical issues. This was done with the help of the committees and through workshops, supplemented by information from the Steering Committee agencies and the consultant team. The conditions and issues were used to define the next steps of the planning process.

Web Site

A web site (www.202and6.com) was established early in the planning process. It was continually updated to provide information on the planning process and meeting schedules. Suggestions and comments on the study could be submitted through the web site. All study documents were available at the web site

Consensus Objectives

Based on residents' suggestions, objectives addressing neighborhood design, transportation and the environment were established. The consensus objectives were presented in this chapter. More specific objectives are discussed in **Chapter V**. The objectives were used to develop alternative future land use and transportation scenarios for testing.

Short Term Action Projects

A decision was made early in the study that emphasis must be placed on fixing known problems as quickly as possible. These "early action" projects were defined as items that would clearly improve transportation conditions and could be implemented quickly at low cost. Fifty projects were identified and prioritized based on ideas from stakeholders and from workshop participants. These projects are presented in **Chapter III**. Many of them were implemented before completion of this Plan. Others were moving toward construction. A few were found to require further study or more extensive preparation.

Buildout Analysis

A forecast of the remaining potential for development under existing zoning was prepared. This analysis identified potential development for all vacant and underutilized parcels (those parcels not developed to the full extent permitted by zoning). The parcels analyzed were identified by the three municipalities. The results are presented in **Chapter II**.

Origin and Destination Survey

An origin and destination survey was conducted to ensure that the land use and transportation model would accurately reflect travel patterns. The survey yielded 3,000 responses during the one-day peak a.m. and peak p.m. periods when the survey was conducted. The results are summarized in **Chapter II**. The complete survey report is provided in **Appendix D**.

Alternative Scenario Development

Alternative land use and transportation scenarios were prepared based on visioning and alternative futures workshops involving the general public and the Stakeholders Committee. The scenarios are presented in **Chapter IV.**

Transportation and Land Use Modeling

A motorized vehicle transportation model was prepared based on NYMTC's regional Best Practice Model. This model was used to assess the impacts of the land use and transportation scenarios on trip generation and travel delay. In addition, a traffic operations model was developed to assess impacts of each land use scenario on the volume to capacity ratios and on the level of service at 24 intersections in the study area. The intersections and the traffic conditions are presented in **Chapter II**. The detailed traffic operations analysis is provided in **Appendix E**. The analyses were performed for the PM peak hour period as it typically provides the worst case scenario. Using the results, the consultant determined the improvements that would be needed at each of the 24 intersections to produce operations at an acceptable level of service for current traffic. The transportation model and the traffic operations model were then used to compare changes to the system that would result from the different land use and transportation scenarios.

Preferred Land Use Plan

After a thorough analysis of the modeling results, whereby each scenario was tested using the land use and transportation model to assess how well each performed within the context of the consensus objectives, Stakeholders Committee members and the consultants joined to identify a preferred land use scenario. This process took place during a day-long workshop. The preferred land use plan is presented in **Chapter IV.** Development of the preferred land use plan was intended to be coordinated with the comprehensive plan update process underway in Cortlandt and Yorktown.

Transportation Improvement Bundles

The preferred land use plan was then utilized in the modeling of three alternative bundles of transportation improvements. Each bundle featured a different package of major road improvements intended to optimize traffic operations. The

three transportation improvement bundles are presented in **Chapter IV**.

Recommended Improvements

The Plan's recommendations are grouped in five categories – major road construction, intersection reconstruction, transportation services, land use management and regional coordination. All of the recommendations are based on the study's consensus objectives and the land use and transportation analysis performed by the consultant. The recommendations are presented in **Chapter V**.

3. Study Products

Thirteen technical reports and presentations were developed in the course of preparing this Plan:

1. July 2000	Issues Summary
2. July 2000	Summary of Current Development Proposals and Recently Approved Projects
3. August 2000	Existing Regulatory Review
4. November 2000	Outreach Visioning Summary
5. March 2001	Full Build Out Scenario
6. April 2001	Early Action Items
7. April 2002	Analysis of Land Use Scenarios and Transportation Improvements
8. April 2002	Synopsis of Findings: Choosing a Preferred Scenario
9. May 2002	Community Fact Sheets
10. May 2002	Public Workshop Presentation: Bundling of Land Use Scenarios and Transportation Improvements
11. May 2002	Public Workshop Summary Report
12. August 2002	Stakeholder Workshop Presentation Preferred Land Use and Transportation Bundles
13. November 2002	Proposed Land Use and Transportation Recommendations Presentation
March 2004	Sustainable Development Plan

II. EXISTING CONDITIONS

This chapter examines the study area's existing road system and traffic conditions, traffic and transit patterns, pedestrian and bicycle facilities, land use and environmental conditions. The findings presented here became the baseline conditions used throughout the study. These conditions were utilized in the full buildout analysis and in the development of land use scenarios and transportation improvements.

A. ROAD SYSTEM AND TRAFFIC CONDITIONS

The three major travel corridors in the study area are Route 6, Route 202/35 and the Bear Mountain Parkway (BMP). These three roadways extend between Route 9 on the west, in the City of Peekskill, and the Taconic State Parkway on the east. Route 6 and Route 202/35 pass through downtown Peekskill. The BMP begins at Route 9 south of Annsville Circle and skirts the north side of downtown.

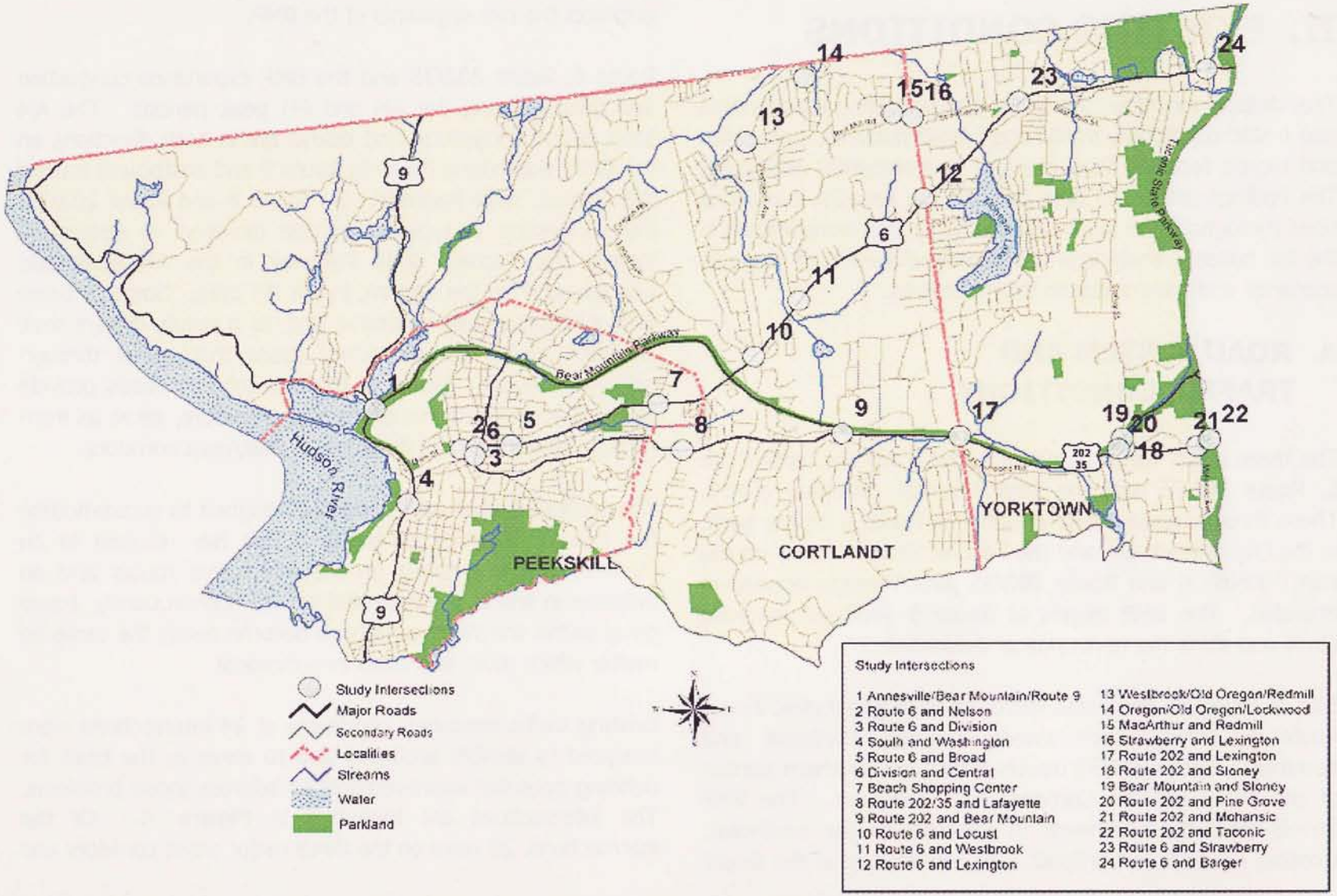
East of Peekskill, the roads serve different geographic areas. Route 6 travels northeasterly through Cortlandt and Yorktown. Route 202/35 travels across the southern portion of the study area in Cortlandt and Yorktown. The BMP travels from the northwest in Peekskill to the southeast, crossing Route 6 in Cortlandt. Its terminus is at the Route 202/35 intersection in Cortlandt. The BMP Extension begins to the east in Yorktown at Route 202/35 near Stoney Street and connects to the Taconic State Parkway. Route 202/35 connects the two segments of the BMP.

Route 6, Route 202/35 and the BMP experience congestion and delays during the AM and PM peak periods. The AM peak period congestion and delays are in both directions on the BMP, westbound towards Route 9 and eastbound toward the Taconic State Parkway. On Route 6 and Route 202/35, the congestion is typically in one direction — eastbound toward the Taconic State Parkway in the AM peak and westbound from the Taconic in the PM peak. Some of these delays become quite extensive and, as a result, drivers seek alternate routes on secondary roads that travel through residential areas. Some of these secondary roads provide the only access to some areas and, therefore, serve as main routes, linking with the three major east/west corridors.

The secondary roadways were not designed to accommodate the current volumes of traffic. This has resulted in an increase of travel times on the alternative routes and an increase in traffic in residential areas. Consequently, travel times within the study area have become nearly the same no matter which route is chosen by a motorist.

Existing traffic operating conditions at 24 intersections were analyzed to identify problems and to serve as the basis for defining potential improvements to address those problems. The intersections are identified in **Figure 4**. Of the intersections, 20 were on the three major travel corridors and

Figure 4. Study Intersections



four were on secondary roads in the study area.

As described below, it was found that 19 of the 24 intersections are failing (Level of Service E or F) under current conditions.

"Level of Service (LOS)" is a quantitative measure that refers to the overall quality of traffic flow at an intersection, ranging from a very good LOS A to a very poor/failing LOS F. Descriptions of these service levels, and the associated delays, are provided below:

LOS A – The highest level of service. Under this condition, approaches to the intersection seem quite open, turning maneuvers are easily made and drivers encounter very smooth operations. At signalized and unsignalized intersections, average vehicle delays are less than 10 seconds.

LOS B – Very good/stable operation. At signalized intersections, average vehicle delays are between 10-20 seconds. At unsignalized intersections, average vehicle delays are between 10-15 seconds.

LOS C – Stable operation, however at times, back-ups of a few vehicles may occur. Drivers begin to feel restricted, although not uncomfortably so. At signalized intersections, average vehicle delays are between 20-35 seconds. At unsignalized intersections, average vehicle delays are between 15-25 seconds.

LOS D - Traffic periodically becomes restrictive and unstable. Vehicle delays may be substantial for short durations during the peak periods. At other times, clearance of backed-up vehicles does occur eliminating excessive queuing (back-ups). At signalized intersections, average vehicle delays are 35-55 seconds. At unsignalized intersections, average vehicle delays are 25-35 seconds.

LOS E – An intersection at maximum capacity. It may be considered failing because it does not meet traffic demands. At signalized intersections, average vehicle delays are between 55-80 seconds. At unsignalized intersections, average vehicle delays are between 35-50 seconds.

LOS F – Over capacity (failing) conditions. The intersection is fully congested. For unsignalized intersections, only nominal gaps in mainline flow exist, making it difficult to traverse or enter mainline traffic. At signalized intersections, average vehicle delays exceed 80 seconds. At unsignalized intersections, average vehicle delays exceed 50 seconds.

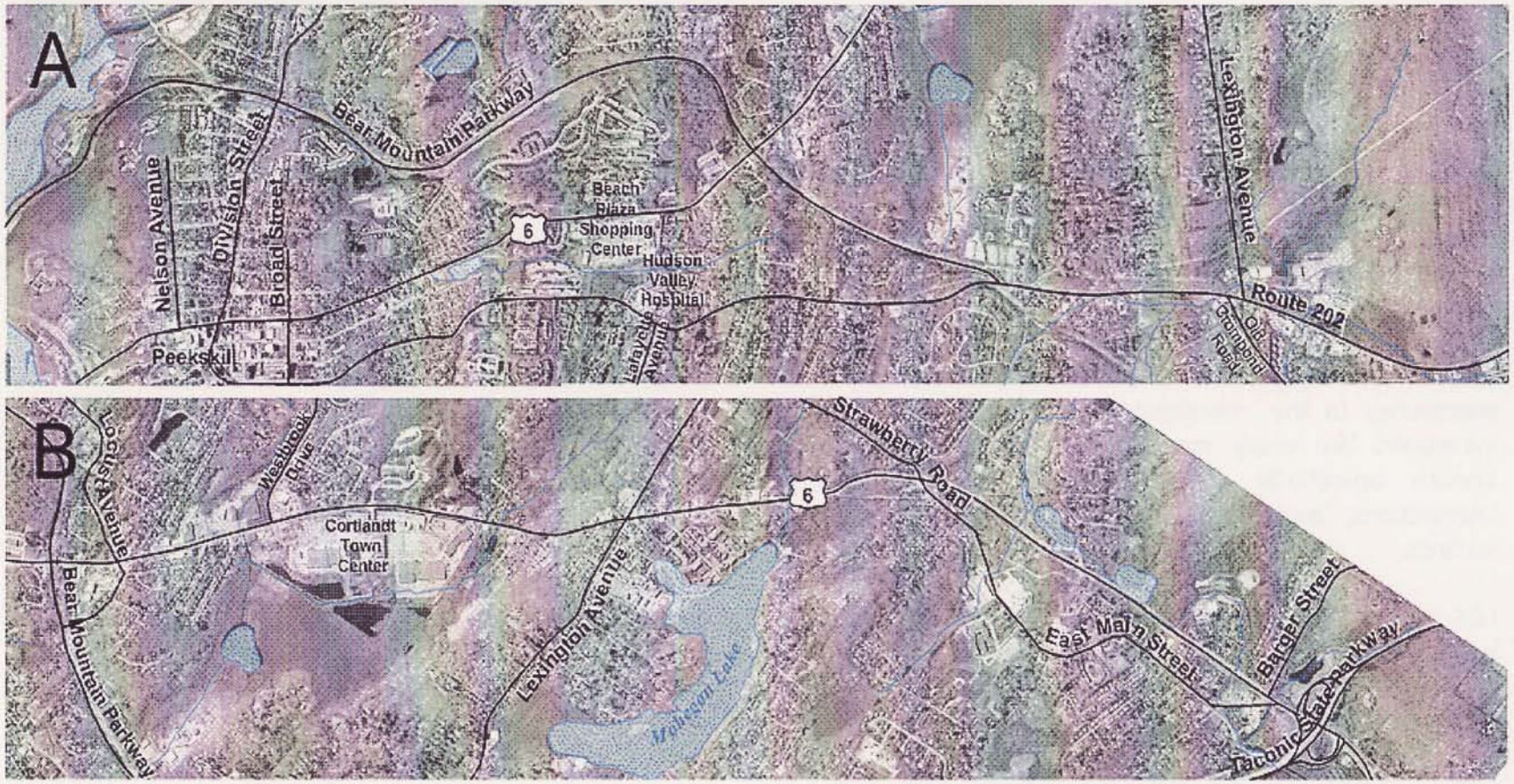
The three major travel corridors and key off corridor roadways are further described below. The LOS during the peak PM hour for the 24 key intersections are also provided.

1. Route 6 Corridor

The Route 6 corridor is shown on **Figure 7**. Its key sections are:

a. Downtown Peekskill. Route 6 is Main Street in the

Figure 5. Aerial of Route 6 Corridor



downtown. The road consists of two travel lanes with on-street parking. Although it is designated as a state touring route, it is maintained by the City of Peekskill. The corridor is signalized with closely spaced intersections that lack signal coordination and turning lanes. This situation, coupled with heavy truck traffic, causes significant congestion and delays during the peak travel periods. The existing Levels of Service at key study intersections are:

Intersection No.	Intersection	Level of Service
2	Route 6 and Nelson Avenue	E
3	Route 6 and Division Street	C
4	South Street and Washington Street	D
5	Route 6 and Broad Street	F
6	Division Street and Central Street	B

b. Beach Shopping Center. Route 6 becomes a 4-lane signalized facility with no on-street parking east of downtown Peekskill. The road is maintained by the City of Peekskill within the city limits. Congestion is not an issue along this section of Route 6.

Intersection No.		Level of Service
7	Route 6 and Dayton Avenue	B

c. Cortlandt Town Center. Route 6 serves the primary commercial corridor of the Town of Cortlandt, including the Cortlandt Town Center. The road is maintained by the State of New York. While this is a heavy commercial corridor, the traffic operates relatively smoothly. This is a result of upgrades to signals and to the use of access management techniques, such as shared driveways, that have been implemented. In addition, prior capacity constraints along this section of Route 6 have been removed since the creation of four travel lanes and separate turn lanes. However, better signal coordination and new left turn restrictions could improve traffic flow and safety during peak hours. The current Level of Service at key study intersections is:

Intersection No.	Intersection	Level of Service
10	Route 6 and Locust Avenue	C
11	Route 6 and Westbrook Drive	D

d. Mohegan Lake. Further to the east, Route 6 returns to a two-lane facility at its intersection with Lexington Avenue. The land use along Route 6 east of Lexington Avenue follows a traditional hamlet pattern in which many buildings have very short setbacks from the road edge. The mix of neighborhood business uses and high through traffic results in the greatest traffic congestion in the study area. Traffic is delayed considerably in the peak hour in each primary travel direction as it is confined to the two lane facility. This section of Route 6 is maintained by the State of New York. The Level of Service at the key intersection along this section is:

Intersection No.	Intersection	Level of Service
12	Route 6 and Lexington Avenue	E

e. Shrub Oak. East of Mohegan Lake, Route 6 becomes a 4-lane arterial facility with a center median and left turn lanes provided at key signalized intersections. Traffic through this segment operates with very little delay. However, many intersecting side streets carry traffic from Putnam Valley, northeast Cortlandt and Yorktown neighborhoods to the north of Route 6 that is moving toward the Taconic State Parkway and other destinations. These vehicles can experience long delays and congestion as they enter Route 6 along this segment. Many of these drivers access Route 6 via Strawberry Road, a residential street connecting to Lexington Avenue. The existing LOS for key study intersections in this subarea are:

Intersection No.	Intersection	Level of Service
23	Route 6 and Strawberry Road	E
24	Route 6 and Barger Street	D

2. Route 202/35 Corridor

The 5.5 mile Route 202/35 corridor is shown on **Figure 6**. Its key intersections are:

Intersection No.	Intersection	Level of Service
8	Route 202/35 and Lafayette Avenue	D

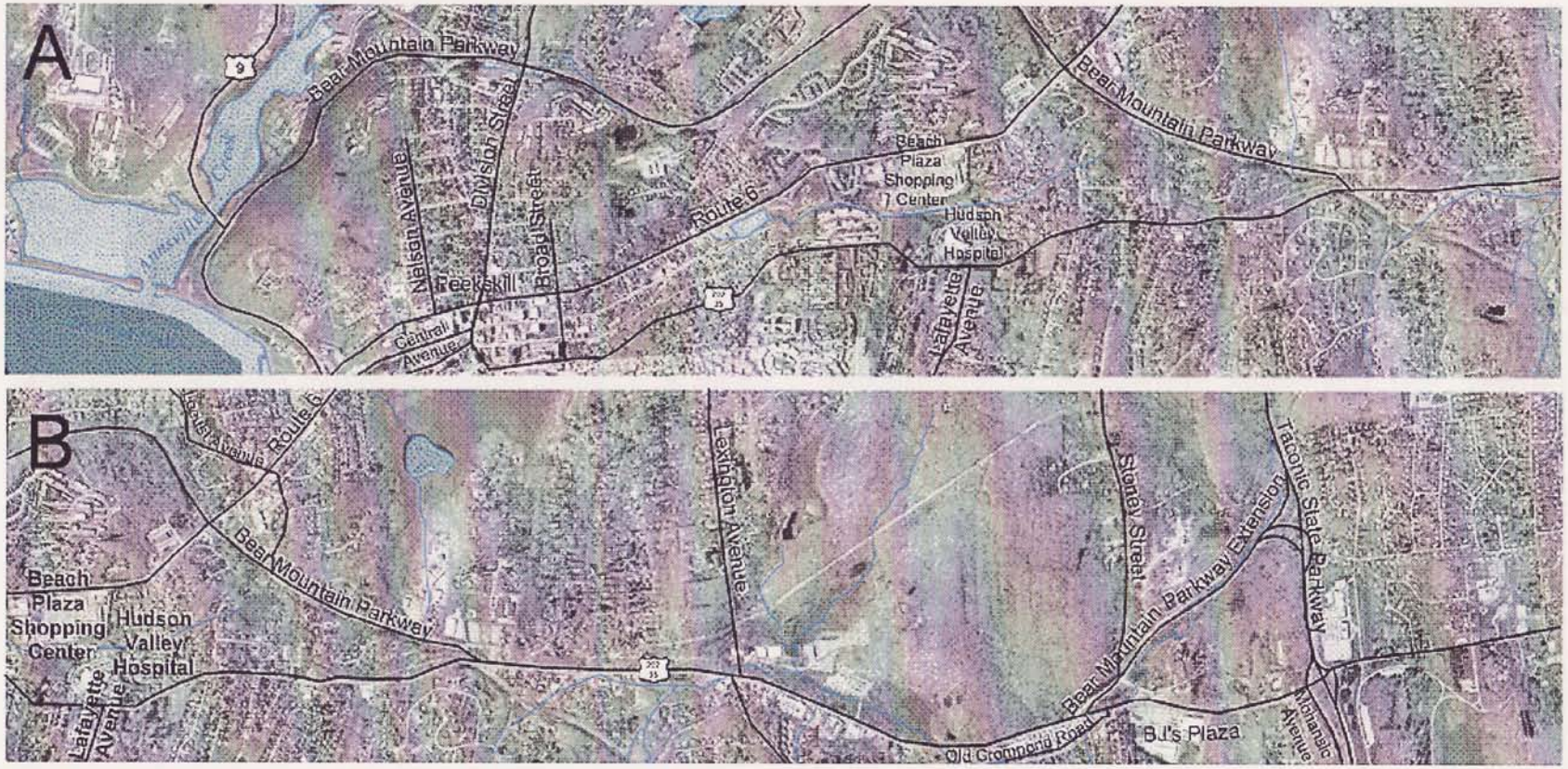
a. Downtown Peekskill. After its split from Route 6 in Peekskill, Route 202/35 is a two-lane facility with multiple curb cuts. The roadway is maintained by the City of Peekskill. There are a limited number of signalized intersections. No significant issues were raised regarding these intersections during the study.

b. Hudson Valley Hospital Center. An issue was raised during the study regarding traffic in the vicinity of the hospital center on Route 202/35 in Cortlandt near the Peekskill border. The entrance to the hospital is located to the west of the hospital exit which is located near Lafayette Avenue, on the opposite side of Route 202/35. In addition, multiple unsignalized key intersections exist by the hospital site. Route 202/35, which is maintained by the State of New York, is only two lanes wide in this area. Although the Lafayette Avenue intersection was found to operate at an acceptable LOS, there are safety concerns due to westbound through traffic utilizing the shoulders to avoid vehicles turning left onto Lafayette Avenue.

c. Crompond. Route 202/35 is a two-lane road through Cortlandt and western Yorktown that experiences steady traffic. East of the intersection with the Bear Mountain Parkway, traffic on Route 202/35 increases significantly because the Bear Mountain Parkway ends/begins at this point as it joins Route 202/35. There are a limited number of signalized intersections.

The volume of traffic compared to roadway capacity is problematic on Route 202/35 in this area. Delays occur during peak periods (eastbound in the a.m. peak period and westbound in p.m. peak period). In addition, delays occur when drivers make turning movements into driveways of the many businesses located along Route 202/35. Other delays

Figure 6. Aerial of Route 202/35 Corridor



are caused by left turning movements at traffic signals. Significant delays also occur on the intersecting side streets such as Croton Avenue. The existing LOS for the two key intersections are:

Intersection No.	Intersection	Level of Service
9	Route 202/35 and BM Parkway	E
17	Route 202/35 and Lexington Avenue	F

d. Bear Mountain Parkway Triangle. Route 202/35 has three lanes between Pine Grove Road and the Taconic State Parkway with channelized intersections to accommodate turning movements. Traffic volumes are high along this section due to three primary factors: east/west through traffic which includes traffic that also utilizes the BMP to access Route 9 and the Bear Mountain Bridge, the corridor's role as a main commercial area and the road's function as a distributor of local traffic to/from the Taconic State Parkway. Traffic congestion occurs when vehicles traveling through the area to connect with other roads conflicts with vehicles destined for businesses located along Route 202/35. The LOS at the key study intersections are:

Intersection No.	Intersection	Level of Service
18	Route 202/35 and Stoney Street	F
19	BM Parkway Ext and Stoney Street	D
20	Route 202/35 and Pine Grove Avenue	F
21	Route 202/35 and Mohansic Street	F
22b	Route 202/35 and Taconic Parkway	F

3. Bear Mountain Parkway Corridor

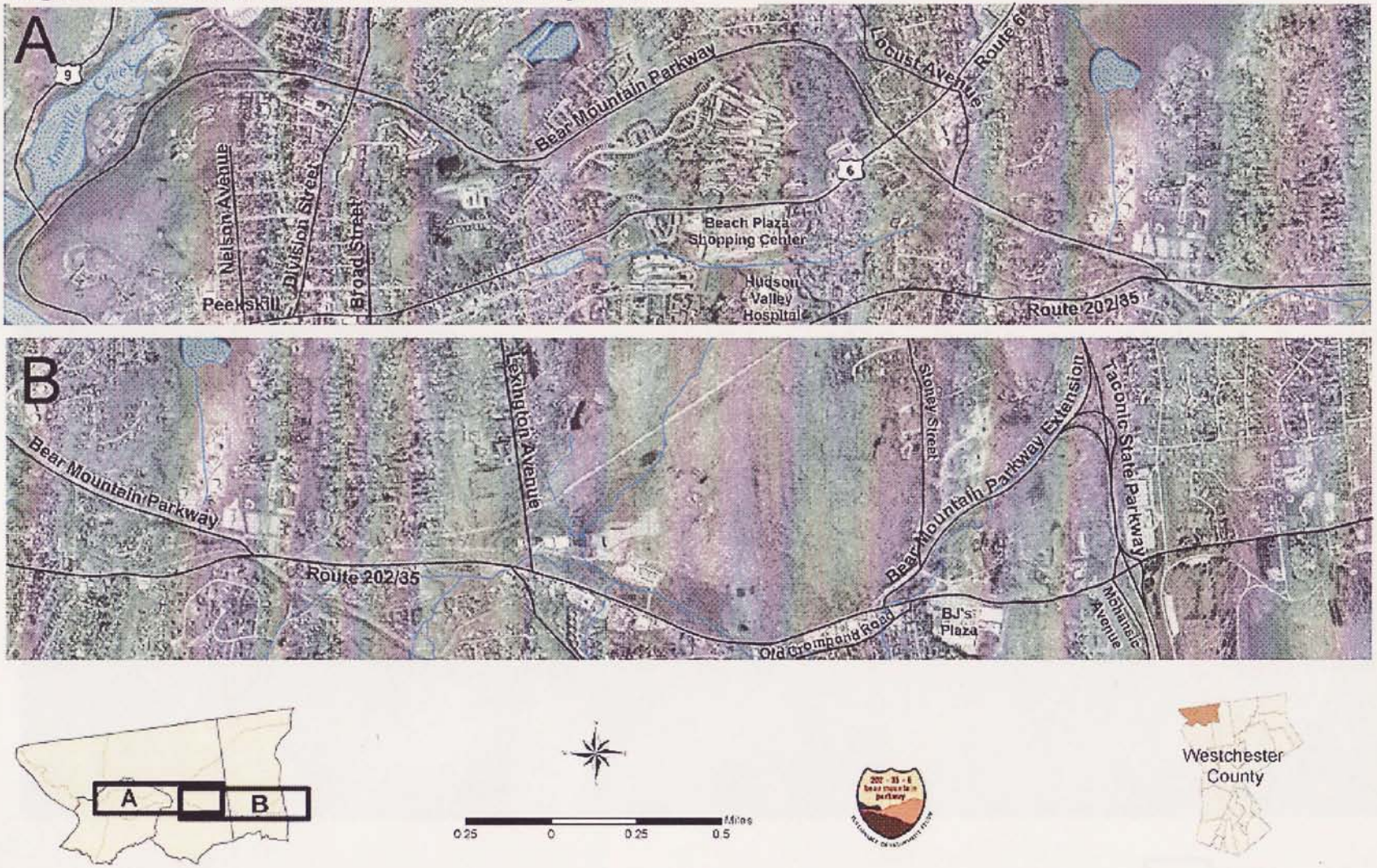
The Bear Mountain Parkway corridor is shown on **Figure 7**. It extends approximately 4 miles southeast from Route 9 to Route 202/35. It has an interchange with Route 6 east of the City of Peekskill. It is maintained by the State of New York for its entirety. Extending east from the intersection of Route 9 to the interchange with Division Street, the Parkway is a two-lane limited access facility. From its interchange with Division Street to its eastern terminus at Route 202/35 in Cortlandt, the Parkway is a 4-lane facility. The Parkway serves as a bypass around downtown Peekskill as well as a through route in combination with the Route 202/35 and Route 6 corridors.

The two locations where the parkway experiences delay are at each end, Route 9 and Route 202/35. Due to the fact that most of the facility is 55 mph, the speed at which vehicles arrive at these intersections is a safety concern. In addition, the intersections' inability to process the arrival volumes cause long queues at the intersections. The LOS at these intersections are:

Intersection No.	Intersection	Level of Service
1	Bear Mountain Parkway and Route 9	F
9	BM Parkway and Route 202/35	E

The BMP Extension extends 0.9 miles between Route 202/35 and the Taconic State Parkway in Yorktown. It is not

Figure 7. Aerial of Bear Mountain Parkway Corridor



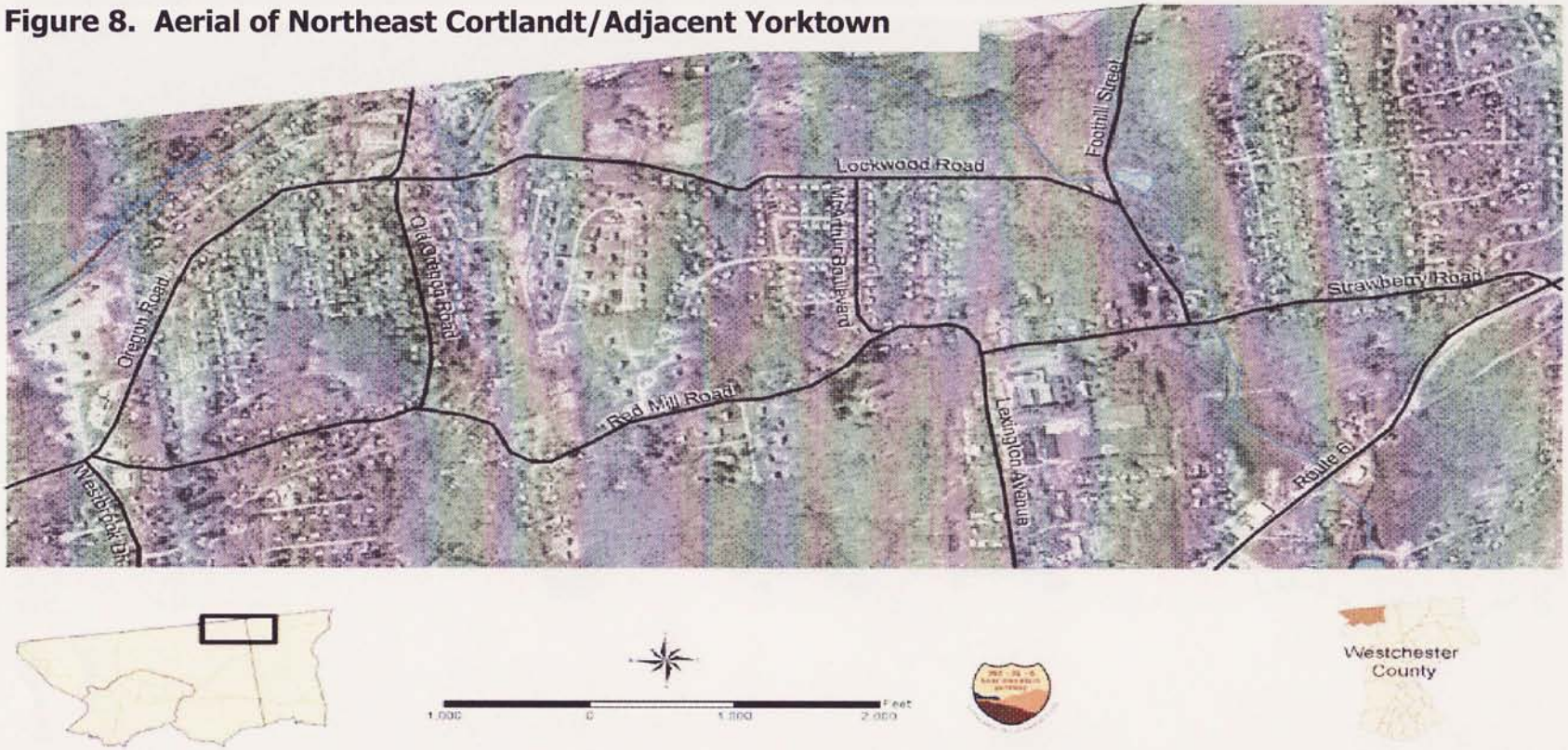
connected to the westerly section of the Bear Mountain Parkway. In addition to its terminus at Route 202/35, the BMP Extension has one other intersection, also unsignalized, at Stoney Street, immediately north of Route 202/35. (See Bear Mountain Parkway Triangle discussion.)

A four mile long right-of-way was reserved many years ago for the unbuilt section of the BMP. It parallels the north side of Route 202/35 and is owned by the State of New York. The proposed connection of the BMP through this right-of-way has been discussed for many years. The land is considered to have environmental constraints including wetlands, floodplains, aquifer recharge areas and sensitive habitats. One aim of this study was to identify a consensus regarding the potential for constructing a BMP connection.

4. Off Corridor Roadways

Since the major routes in the study area experience delays, drivers often use secondary roads as alternate routes. In addition, several local roads serve as main traffic routes due

Figure 8. Aerial of Northeast Cortlandt/Adjacent Yorktown



to a lack of State highways.

a. Northeast Cortlandt and Adjacent Yorktown. The northeast quadrant of Cortlandt, along with northwest Yorktown, experience some of the most pronounced impacts of major traffic flow on secondary roads. See **Figure 8**. The primary impacts are on the Oregon/Red Mill/Strawberry Roads corridor, on Foothill Road and on Mill Street. The Oregon/Red Mill/Strawberry Roads corridor parallels Route 6 approximately one mile to the north. Foothill Road connects Putnam Valley with Red Mill Road. Mill Street connects Putnam Valley with Route 6 between Mohegan lake and Shrub Oak. The land use along these roads consists predominately of single-family residential neighborhoods. The roadways provide local access and are rural in character. In light of these characteristics, the volume of traffic is problematic.

Sources of the traffic are the neighborhoods in the area as well as the residents and businesses of Putnam Valley, located directly to the north. Significant commuter traffic from Putnam Valley utilizes all of these roads. The LOS at the study intersections in this area are:

Intersection No.	Intersection	Level of Service
13	Westbrook Drive/Oregon Road	C
14	Oregon Road, Lockwood Rd and Old Oregon Rd	C
15	McArthur Road and Red Mill Road	B
16	Lexington Avenue and Strawberry Road	C

The Westbrook Drive/Oregon Road intersection (13) operates at an overall LOS of C. However, the Red Mill Road leg of this intersection is failing during the peak p.m. hour and safety has long been a concern at this intersection. The Town of Cortlandt was evaluating in 2004 the feasibility of utilizing a "round-a-bout" at this intersection in order to safely facilitate traffic flow, eliminate the peak p.m. LOS problem on Red Mill Road and improve the overall LOS of this five leg intersection to B.

b. North/South Connections. Due to areas of congestion on the three major east/west corridors, traffic utilizes north/south roadways to move between the corridors. None of these north/south roadways are State highways and none were constructed or designed to handle significant through volume traffic. The two roadways most impacted are the town roads, Lexington Avenue and Stoney Street, linking Route 6 and Route 202/35. Truck traffic also utilizes these secondary streets to access the Cortlandt Town Center and commercial sites along both Route 202/35 and Route 6. Additional diverted traffic uses other local roads to avoid corridor and intersection congestion.

B. TRAFFIC AND TRANSIT PATTERNS

Where does all of the traffic come from? It's a basic question that requires an answer in order for effective long term roadway improvements to be identified. The answer may also indicate that changes in land use policies need to be considered.

1. Origin and Destination Survey

An origin and destination survey was conducted to identify the percentage of traffic in the corridor that is "through traffic." Through traffic was defined in this study as a trip that passes through the study area and has both its origin and destination outside of the study area. The information gathered through the "O&D" survey also provided the necessary data to develop a corridor level traffic model for the study area.

In order to obtain a valid statistical sample of the current travel patterns, four survey stations were set up at the perimeter of the study area. This setup allowed through trips to be captured as well as locally generated trips destined for outside the study area. The four sites were:

- Station 1: Annsville Road (Route 9) on Peekskill/ Cortlandt border (West/Southbound traffic surveyed)
- Station 2: Main Street (Route 6 and Route 202/35) and Decatur Avenue in Peekskill (Eastbound traffic surveyed)
- Station 3: Route 202/35 east of Lexington Avenue in Yorktown (Westbound traffic surveyed)
- Station 4: Route 6 east of Mill Street in Yorktown (Westbound traffic surveyed)

Stations 1 and 2 were surveyed on Tuesday June 13, 2000 and Stations 3 and 4 were surveyed on Wednesday June 17, 2000. The survey stations operated from 6:30 am–9:30 am and 4:30 pm-7:00 pm. The stations were surveyed in the peak direction for both the AM and PM peak hours. The motorist was asked to provide:

- Address at start of trip
- Address at end of trip
- Trip Purpose

2. Survey Findings on Vehicle Trips

Extrapolated to a 24-hour basis, the survey results found that only 9.9% of all trips that passed through the survey stations were through trips. All other trips had one or both end points within the study area, contradicting a common assumption that the area's traffic problems are created by vehicles passing through the study area. Trips with both end points in the study area comprised 28% of all trips. Of the trips with only one end in the study area, 31.2% were external to internal and 28.0% were internal to external. Internal to external trips were the largest trip category in the AM peak at 34.8% while the external to interior trips were the largest in the PM peak , also at 34.8%.

a. Through Trips. As noted above, the survey found that of all trips that passed through the survey stations in a 24-hour period, only 9.9% were through trips. The percentage of through trips in the AM and PM peak periods for all trip purposes was 9.4% and 10.2% respectively. On a trip purpose basis, commuter trips (the journey between work and home) that pass through the study area made up 10.4% of all commuter trips in the AM peak and 11.7% of all commuter trips in the PM peak.

The survey also found that the level of through trucking in the study area is low, making up 7.6% of all truck trips in a 24-hour period through the survey stations.

Internal Generated Trips. In the AM peak, 63.2% of all trips began within the study area with 28.4% ending at another location in the study area and 34.8% ending outside of the study area. In the PM peak, a lower 55% of all trips originated in the study area and these trips were nearly equally split between trips with end points in the study area (27.2%) and trips with end points out of the study area (27.8%).

On a trip purpose basis, commuter trips (the journey between work and home) beginning in study area made up 58.7% of all commuter trips in the AM peak and 55.4% of all commuter trips in the PM peak. Of all commuter trips that began in the study area, 45% ended within the study area in both the AM peak and the PM peak — a percentage that may come as a surprise in an area perceived even by residents to be a suburban "bedroom" community. In fact, 26.0% of all commuter trips were found to begin and end in the study area.

On a 24-hour basis, 66.0% of all "Shopping" trips began within the study area with 36.8% ending at a location in the study area and 29.2% ending outside the study area. Considering the retail opportunities available within the study area, it is somewhat surprising to find that 44.2% of all shopping trips are to destinations outside of the study area.

With regard to trucks, the survey found that 58.2% of all truck trips in a 24-hour period had an origin in the study area with 24.0% traveling to another location in the study area and 34.2% traveling to a location outside of the study area.

c. External to Internal Trips. On a 24-hour basis, 31.2% of all trips are from outside the study area to locations within the study area. That figure is slightly higher than trips from the study area to outside points (30.8%) and higher than trips that begin and end in the study area (28.0%). In the AM peak, 30.9% of all commuter trips (the journey between work and home) were trips from outside locations to points within the study areas. In the PM peak, this share increased to 33% of all commuter trips. Of all "Shopping" trips on a 24-hour basis, 28.5% were trips from outside the study area to retail destinations within the study area.

Of all truck traffic, 34.1% were truck trips that began outside of the study area and ended at destinations within the study area.

3. Travel Flow Characteristics

Data from the origin and destination survey was used to identify travel flow characteristics within the study area. First, a more detailed analysis of origins and destinations was established to assign trip ends to one of 45 "Traffic Analysis Zones" (TAZ) within the study area or one of eight directions outside of and around the perimeter of the study area. This breakdown allows movement within the study area to be

Figure 9. Trips Between Work and Home 6:30 am to 9:30 am

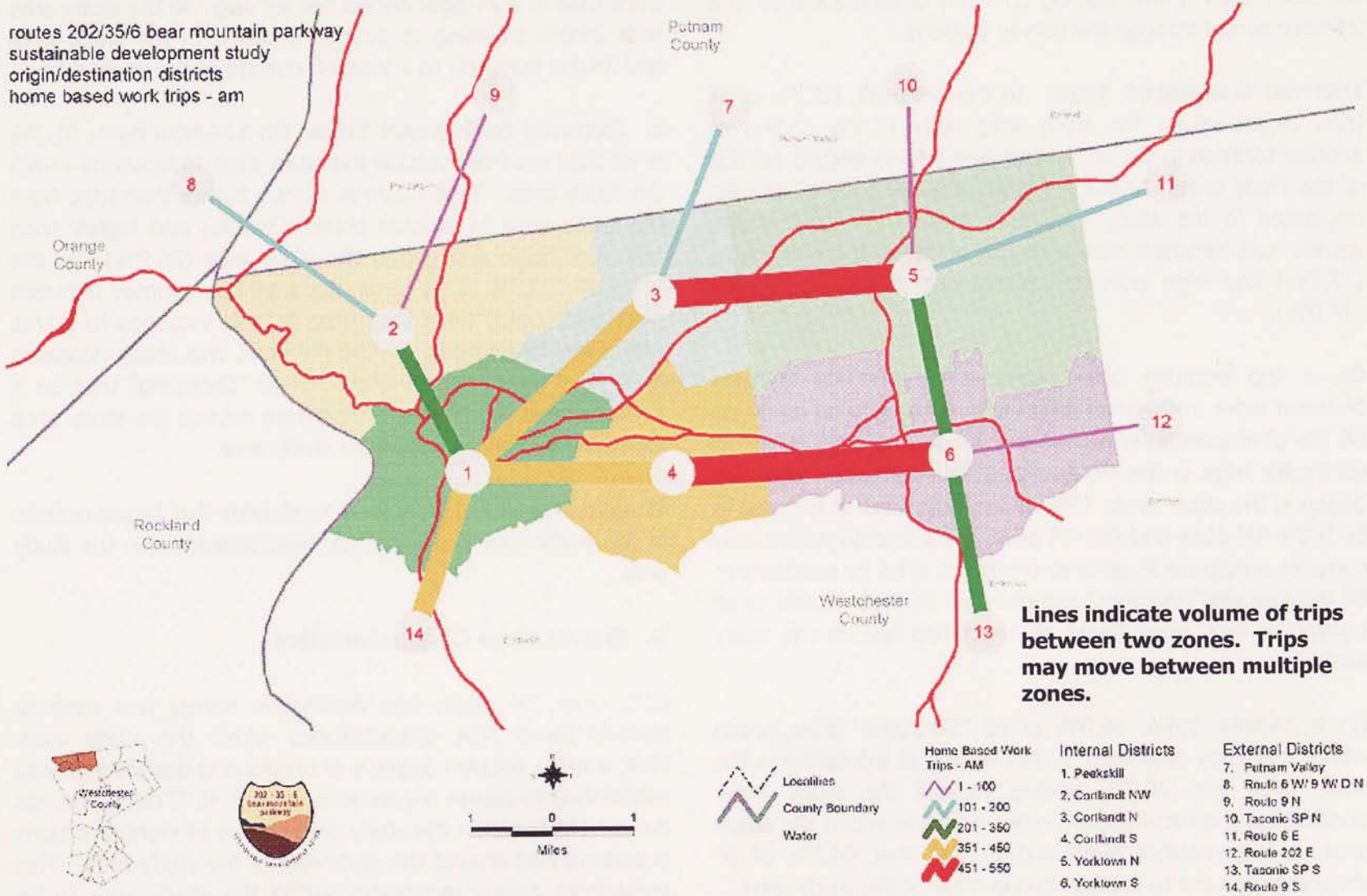


Figure 10. Trips Between Work and Home 4:30 pm to 7 pm

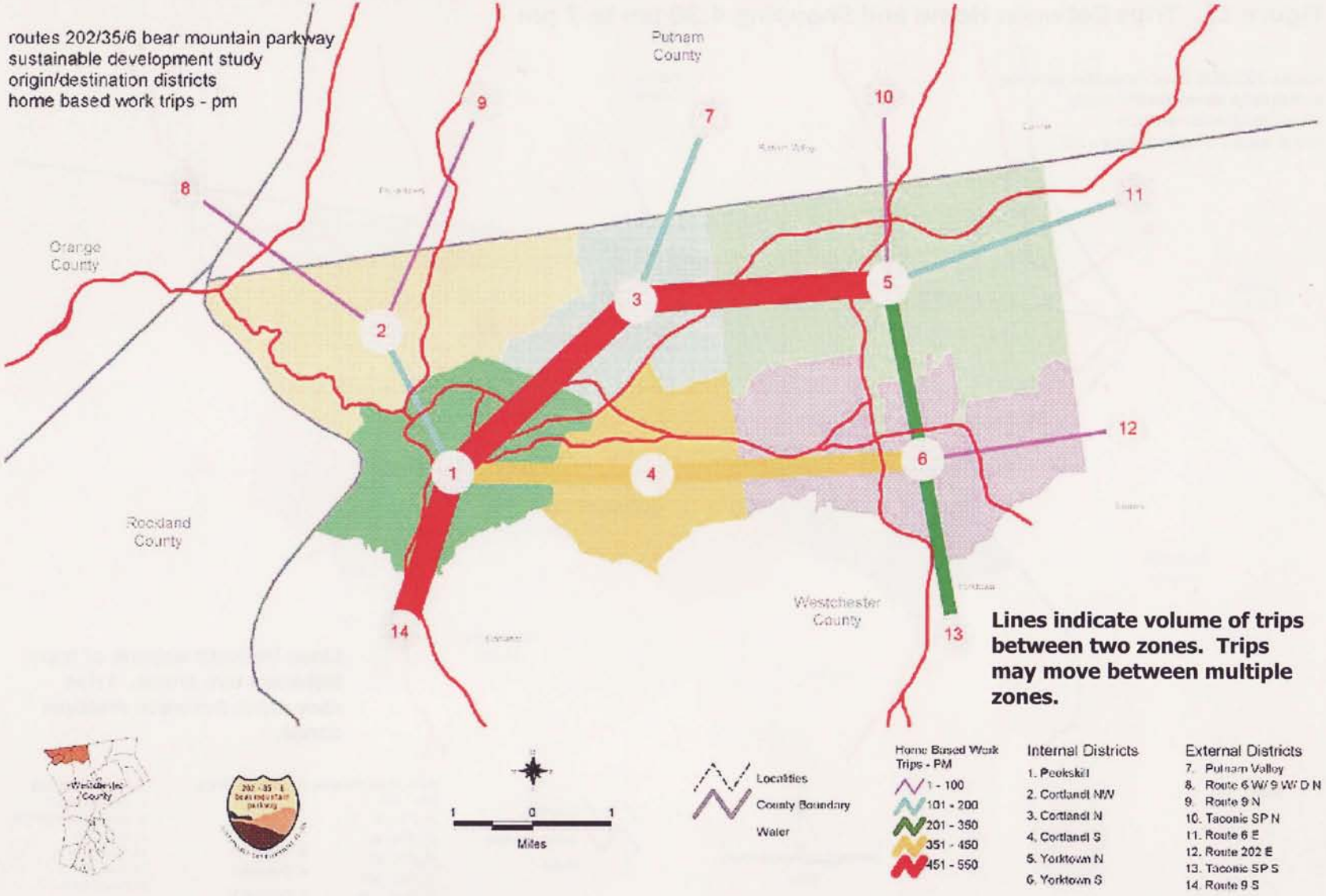


Figure 11. Trips Between Home and Shopping 4:30 pm to 7 pm

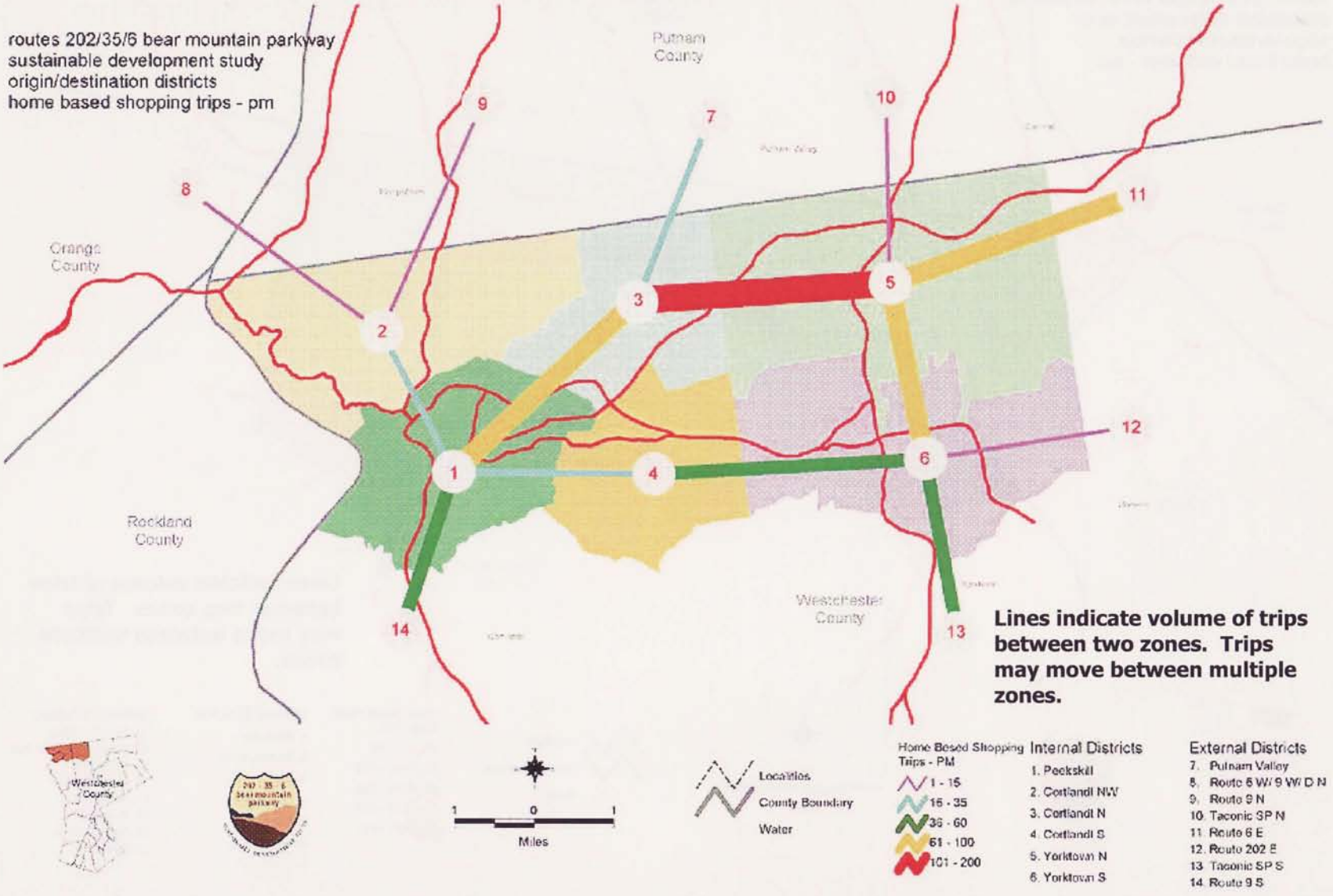


Figure 12. Total Truck Trips Over 24 Hours

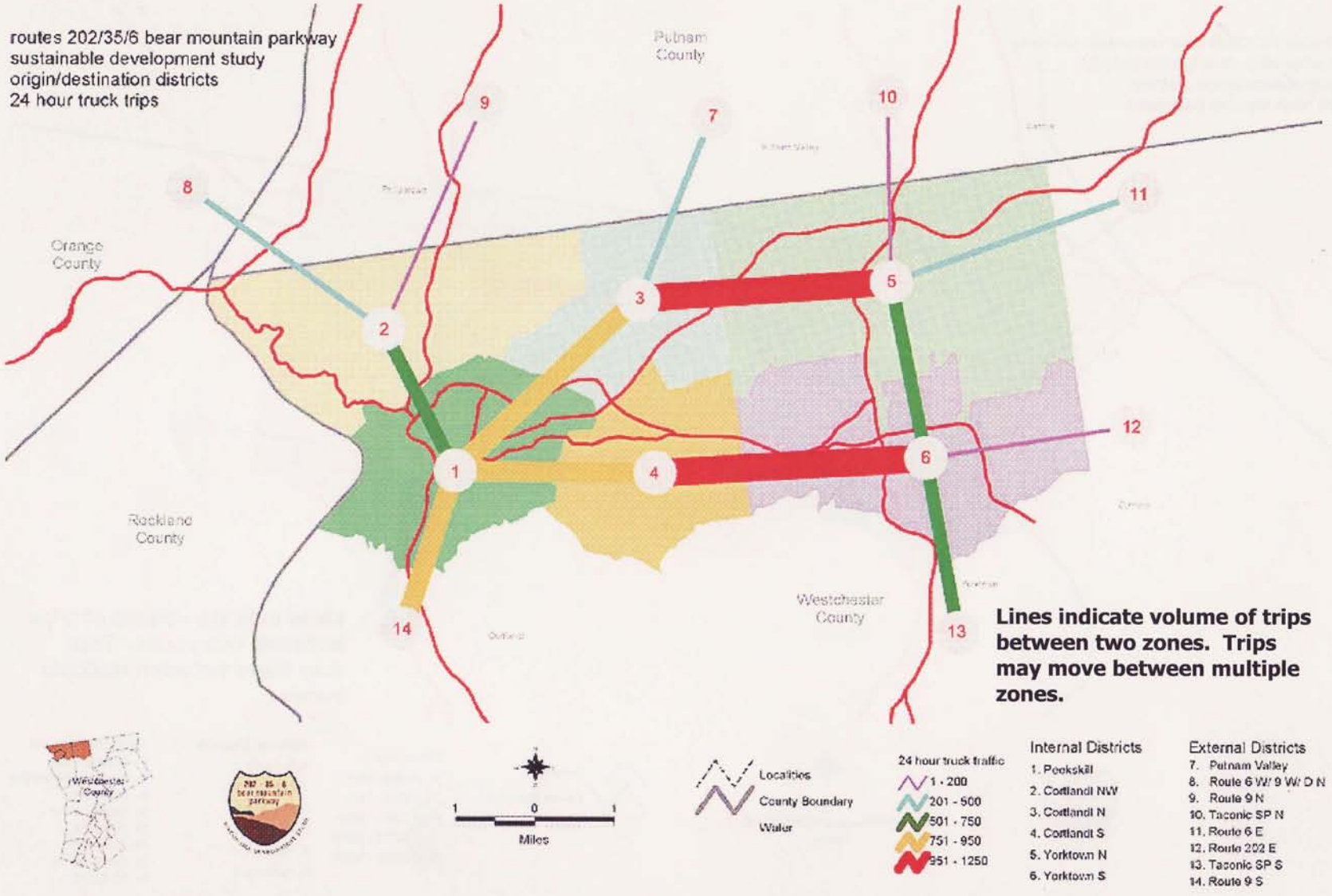
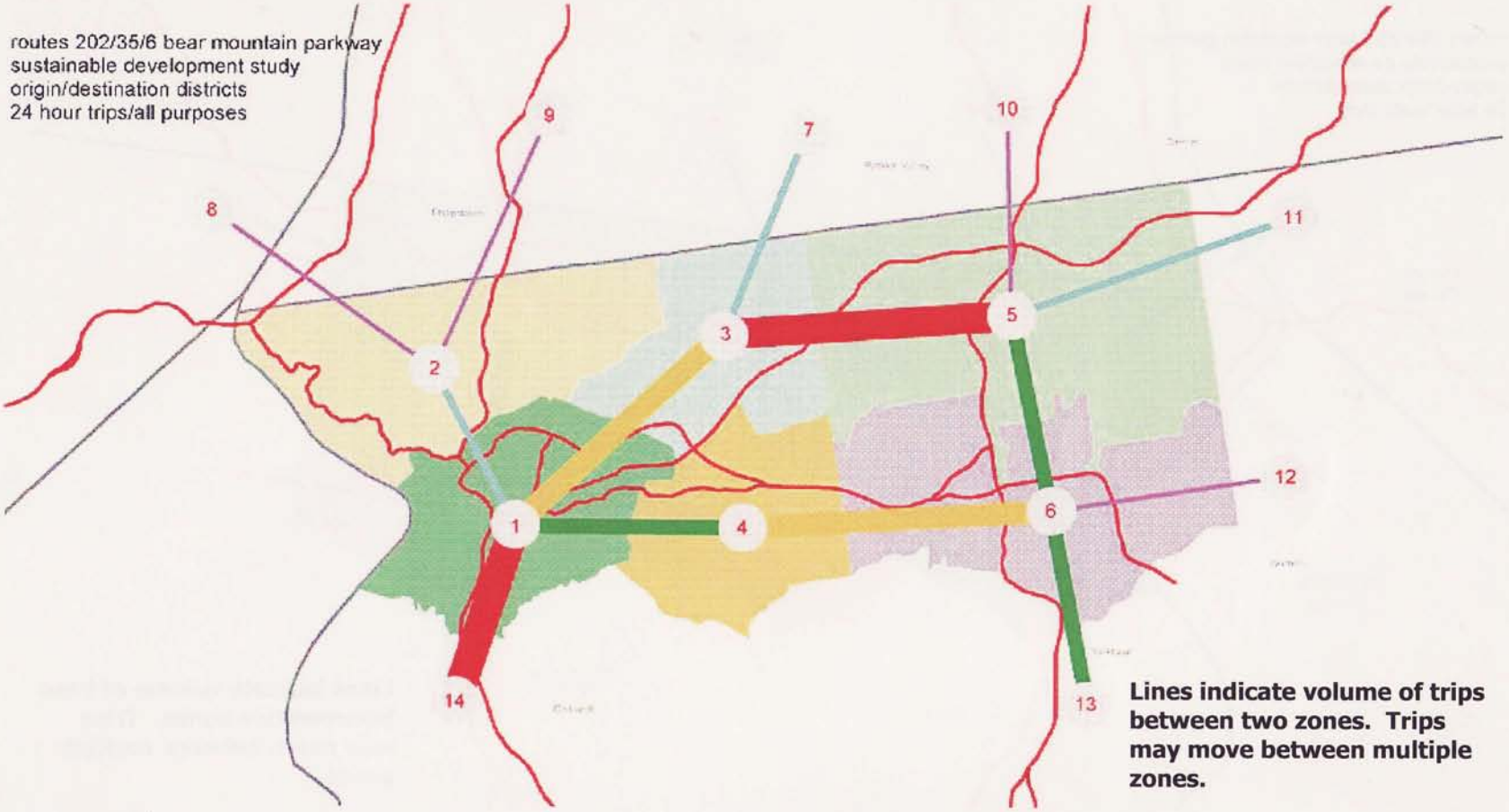


Figure 13. Total Trips Over 24 Hours



better understood. The data also became a component of the traffic modeling.

For purposes of presentation, the 45 TAZs were combined into six districts as shown on **Figures 9 to 13**. These figures show travel flow in simple line graphics. It is important to note these travel flow diagrams are not intended to show travel on particular roads. Rather, the diagrams represent the travel volumes between districts and to external directions.

In all cases, the path with the highest travel demand is between District 5 (Yorktown North) and District 3 (Cortlandt North), essentially along Route 6. However, more strikingly when reviewed together, the figures underscore the finding that there is a high demand in the study area created by internally generated trips. The volumes to and from external points are low and do not equal the volumes between the internal districts.

For Trips Between Work and Home in the AM peak (**Figure 9**), Route 6 between Districts 3 and 5 and Route 202/35 between District 6 (Yorktown South) and District 4 (Cortlandt South) exhibit the highest volumes. The next highest volumes are found between Districts 3 and 1 (Peekskill), between Districts 4 and 1 and between Districts 1 and external direction 14 (Route 9 South).

In the PM peak (**Figure 10**), Trips Between Work and Home have the highest demand along the path from Route 9 South, through Peekskill, through Cortlandt to Yorktown along the Route 6 corridor.

The highest volumes for Trips Between Home and Shopping in the PM peak are between Districts 3 and 5 in the Route 6 corridor (**Figure 11**). There are also high volumes between Districts 11 (Route 6 East) and 5.

4. Truck Connections

Figure 12 shows the pattern of truck movement volumes through the study area.

Trucks over 10,000 pounds are prohibited from using the Bear Mountain Parkway between 7am and 7pm due to safety considerations. As a result, trucks traveling between Route 9 and sites within the study area are diverted through downtown Peekskill on Route 6. This has negatively impacted the quality of life in the downtown by increasing noise and pollution. In addition, the BMP truck restriction encourages trucks approaching from the north to use Highland Avenue in Peekskill to enter the study area. Trucks also utilize Highland Avenue to travel to Oregon Road and Westbrook Drive in order to access the commercial development on Route 6 including the Cortlandt Town Center.

5. Transit Service

Two bus transit systems (Westchester County Bee-Line and Putnam Transit) and one passenger rail system (Metro-North Railroad) provided service in the study area as of January

2003. These services operate at headways (frequency of service) that vary by weekday, weekend and time of day.

a. Westchester County Bee-Line Bus Service. The Bee-Line bus system is operated by the Westchester County Department of Transportation. As shown on **Figure 14**, there are five routes in the study area:

Route 14 – Local service operating between Peekskill and White Plains via Ossining primarily along Route 9A. Average weekday ridership in the study area was 500 passengers in 1998.

Weekday Service: 19 runs in each direction
5:45 am – 11:57 pm, 30-minute headways peak times; 60-minute headways off peak

Saturday Service: 17 runs in each direction
5:55 am – 10:10 pm, 60-minute headways

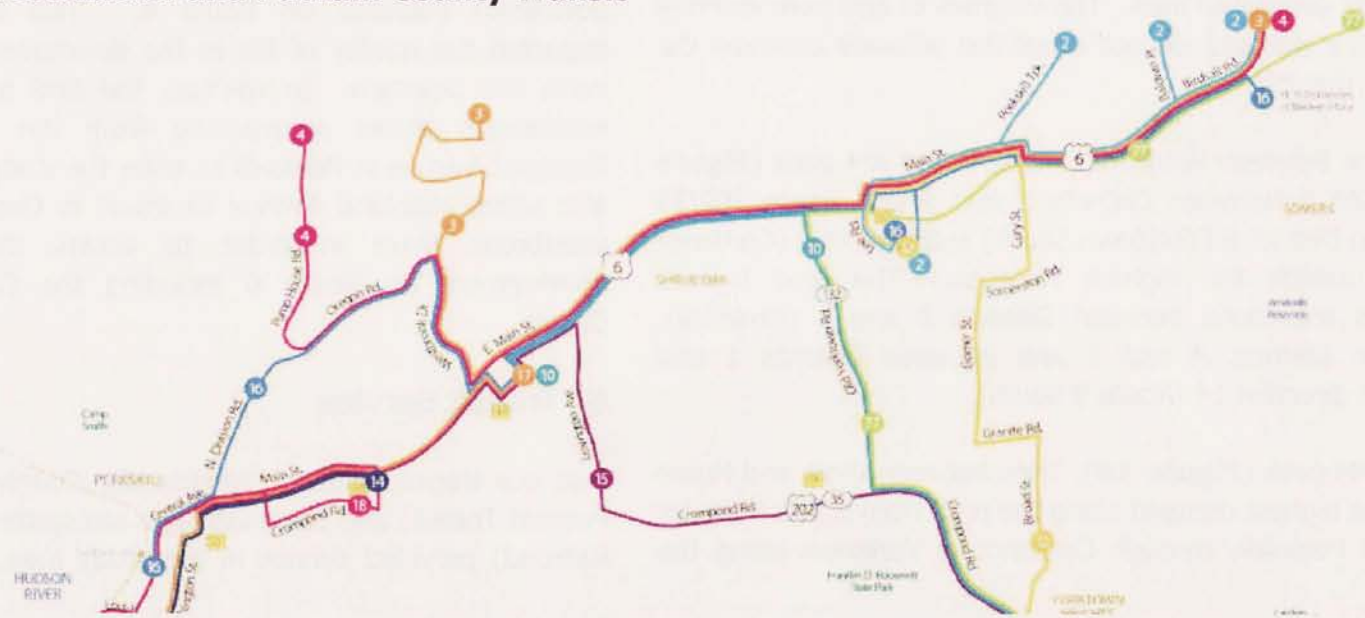
Sunday Service: 5 southbound; 6 northbound runs
10:20 am – 8:28 pm, 120-minute headways

Route 15 – Local service operating between Peekskill and White Plains via Yorktown primarily along Routes 35, 118, 100 and 9A. Average weekday ridership in the study area was 250 passengers in 1999. There is no Sunday service.

Weekday Service: 8 runs southbound; 7 runs northbound
6:20 am – 7:02 pm, 60-minute headways peak; 120-minute headways off peak

Saturday Service: 4 runs in each direction
9:26 am – 8:33 pm, 180-minute headways

Figure 14. Westchester and Putnam County Transit



Route 16 – Local service operating between Peekskill and Yorktown via Route 6. Average weekday ridership in the study area was 350 passengers in 1998.

Weekday Service: 18 runs in each direction
5:45 am – 10:15 pm, 60-minute headways
Saturday Service: 15 eastbound runs and 16 westbound runs
6:45 am –10:27 pm, 60-minute headways
Sunday Service: 9 runs in each direction
9:30 am – 8:00 pm, 60-minute headways

Route 17 – Express service operating as the North County Express weekdays only from Peekskill to White Plains in the morning and from White Plains to Peekskill in the evening primarily via Routes 9 and 9A. Average weekday ridership in the study area was 90 passengers in 1998.

Weekday Service: 3 runs in each direction
6:25 am – 8:50 am and 4:10 pm - 6:20 pm, 40-minute headways

Route 18 – A feeder service operating weekdays only to and from the Peekskill Metro-North station south to Buchanan and east through the city of Peekskill to the Cortlandt town line. Average weekday ridership in the study area was 70 passengers in 1998.

Weekday Service: 15 runs
5:52 am – 7:25 pm, 30-minute headways

b. Putnam Transit System. The Putnam County transit system (PART) operates two routes that originate and terminate in Putnam County yet serve parts of the study area. These two routes operate along Route 6. There is no Sunday service.

Route 2 – Operates from Putnam Plaza in Carmel to the Jefferson Valley Mall in Jefferson Valley just to the east of the study area. The route travels through Mahopac, Baldwin Place and Mahopac Falls. Average ridership was 106 passengers per day in April 2002.

Weekday Service: 7 runs in each direction
6:00 am – 8:00 pm, 120-minute headways
Saturday Service: 5 runs in each direction
8:00 am – 6:00 pm, 120-minute headways

Route 4 – Operates from Putnam Plaza to Poughkeepsie Galleria. It travels through the study area on Route 6 from the Jefferson Valley Mall to Westbrook Drive, then continues on Westbrook Drive and Oregon Road into Philipstown. Average ridership was nine passengers per day in April 2002.

Monday/Wednesday/Friday Service: 1 run
Departs Putnam Plaza 9:00 am; returns 4:40 pm

c. Metro-North Railroad. Passenger rail service is available near downtown Peekskill on Metro-North Railroad's Hudson Line. The station is located along the Hudson waterfront adjacent to the city's Riverfront Green Park. The Hudson Line also provides service at the Cortlandt and

Croton-Harmon stations south of the study area in the Town of Cortlandt. The line accesses lower Westchester County and Grand Central Terminal in mid-town Manhattan as well as locations north to Poughkeepsie. Amtrak services are available at the Croton-Harmon Station.

The City of Peekskill manages a permit parking program at the station for city residents. Parking is free on weekends and holidays. Bee-Line bus service is coordinated with the train arrival/departure schedule.

C. PEDESTRIAN AND BICYCLE ENVIRONMENT

The functionality, safety and attractiveness of an area's pedestrian and bicycle facilities are increasingly recognized as an indicator of quality of life. Such facilities are no longer seen as urban features that have little role in suburbs or in areas outside of downtowns. The presence of pedestrian and bicycle options also increases mobility for people of all ages.

1. Sidewalks

Sidewalks generally do not exist in the study area outside of downtown Peekskill and a few commercial/mixed use areas. Most residential areas do not have sidewalks.

There is an extensive sidewalk system in Peekskill's downtown. Buildings are generally built at the edge of the sidewalk creating an attractive pedestrian environment. A sidewalk extends along the south side of Route 6 from the downtown eastward to the Beach Shopping Center at Dayton Avenue.

There is a sidewalk on the north side of Route 6 west of the Cortlandt Town Center. A sidewalk is provided on the south side of Route 6 from a short distance west of the Cortlandt Town Center to Mohegan Lake.

In the hamlet of Mohegan Lake, sidewalks are located on both the north and south sides of Route 6. The sidewalks end do not extend east of the hamlet along Route 6.

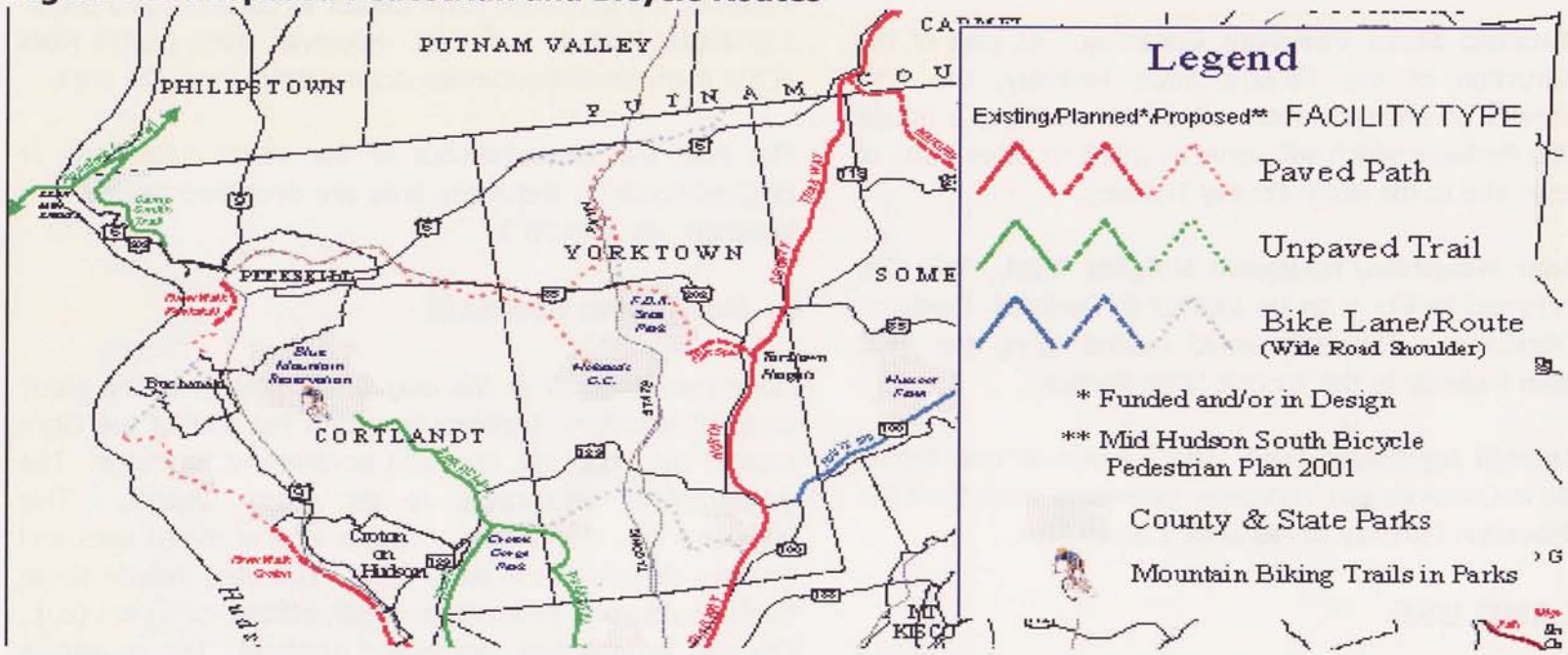
There are sidewalks along East Main Street in the hamlet of Shrub Oak.

2. Bicycle Lanes

There were no designated bicycle lanes within the study area as of January 2004. Biking is generally conducted along the shoulders of both Route 6 and Route 202/35 as well as other area roads. Residents of Yorktown have suggested that bicycle routes be included along Route 202/35.

The Mid-Hudson South Region Bicycle and Pedestrian Master Plan (June 2001) recommends that both Route 6 and 202/35 corridors be developed with on-road bicycle facilities (dedicated lanes and signage). The plan also recommends the signing of East Main Street in Shrub Oak as a bike route.

Figure 15. Proposed Pedestrian and Bicycle Routes



3. Off-Road Trails

The Camp Smith Trail (for hiking only) in the northwest section of Cortlandt is the only dedicated off-road recreational trail in the study area. However, there are several recommended projects in the Mid-Hudson South Region Bicycle and Pedestrian Master Plan (June 2001). In addition, planning and implementation is underway to construct Westchester County Hudson RiverWalk and additional segments of off-road trails.

a. RiverWalk. An overall plan for the creation of RiverWalk was prepared by Westchester County in 2003. As envisioned, RiverWalk would create a continuous trail (with sections appropriate for bicycle use) from the Putnam County line south to the New York City border. In the study area, RiverWalk would incorporate the Camp Smith Trail and the City Peekskill's Annsville Trail, which extends south from Annsville Circle, across Annsville Creek to North Water Street. RiverWalk will continue south on new trail segments alongside Peekskill's waterfront to connect with the Cortlandt Shoreline Trail, which extends south of Peekskill to Ossining.

b. Yorktown Greenway Trail. The Town of Yorktown has received a grant from NYS Hudson River Valley Greenway to study bicycle/pedestrian needs and connections.

c. Taconic State Parkway Crossing. As part of the reconstruction of the Taconic State Parkway, the NYS Department of Transportation will be constructing a bridge over the Parkway which will serve as a link to other parts of Yorktown and to the North County Trailway.

d. Bear Mountain/Yorktown Heights Trail. This 12.0 mile off-road facility is to be located in Peekskill, Cortlandt and Yorktown. The trail would extend along the Bear Mountain Parkway to the Taconic State Parkway.

e. Catskill Aqueduct Trail. This 3.9 mile off-road facility is to be in Cortlandt and Yorktown, extending south from the Bear Mountain Parkway to Mohansic County Park.

D. LAND USE

Land uses and patterns of development within the study area vary significantly by municipality and by subregion. Overall, the study area is less densely populated and has less commercial development than central and southern Westchester County. As of 1999, there were approximately 18,000 housing units in the area. Peekskill contains the area's only urban center. Community character in both the towns of Cortlandt and Yorktown ranges from suburban to semi-rural with the majority of the land in both of these communities zoned for single family residential use. With the exception of the Hudson Valley Hospital Center and public schools, the study area's largest employment sites are the largest retail centers — the Beach Shopping Center in Peekskill, the Cortlandt Town Center in Cortlandt and the B. J.'s/Staples Plaza in Yorktown. However, many people work at the many small businesses located throughout the area.

The land use characteristics of the seven subregions or neighborhoods in the study area are described below. For locations, see **Figure 2**.

1. Downtown Peekskill

Downtown Peekskill is the only urban portion of the study area. It is historic in character and is the core of the City's commercial, shopping, civic and government functions. The downtown is also home to the artists' district. This subregion has the highest concentration of mixed uses and greatest density in the study area. The uses include single family residences, apartments, retail, offices, civic uses (e.g., City Hall, schools and library) and parkland. The downtown has many multi-story buildings in office and residential use. Buildings abut or are in close proximity with each other along many of the streets. The zoning districts include Central Business District and General Commercial. See **Figure 16**.

The area along Route 6 and Route 202/35 from the riverfront to Broad Street forms the core of the downtown area. This area is served by a grid street system, on-street parking and parking structures as well as an extensive sidewalk system.

The historic character of Peekskill's downtown is one of the prime assets for the City's long-term economic revitalization.

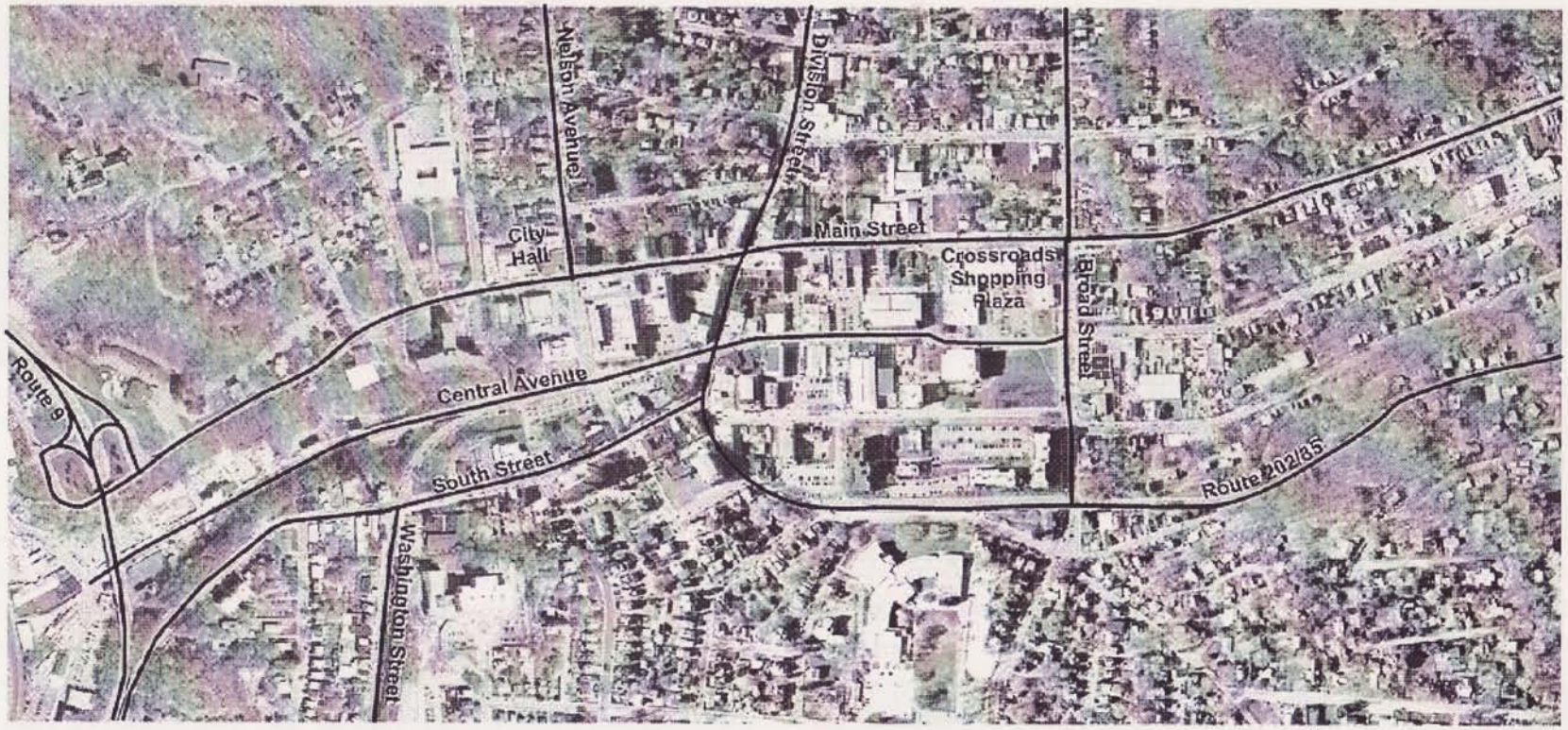


Figure 16. Downtown Peekskill

It is also an area in which new businesses want to invest and shoppers and tourists want to visit. The downtown was designated a local historic district by the City in March 2001. Subsequently, the City's downtown has been designated a National Register Historic District. The City enacted Design Guidelines for the Downtown Peekskill Historic District in 2002 for the purpose of maintaining the character of the area.

A predominately residential area surrounds the downtown business district. The residential areas are predominantly single-family homes with some mixed commercial uses along Division Street and Main Street. There is a limited amount of manufacturing and light industrial south of Route 6. At certain times, Main Street is the only route available to trucks for entering the study area from the north/south Route 9.

The three major corridors in the study area have their west end points at Route 9 along the Hudson River in Peekskill. Main Street is designated as Route 6, 202 and 35 through the downtown from Route 9 to Division Street where Route 202/35 turns to the southeast.

2. Beach Plaza Shopping Center Area

The Beach Plaza Shopping Center, undergoing a major renovation in 2003, anchors the east side of the City of Peekskill. In its vicinity along Route 6 are a mix of office, retail, residential and parkland uses, each with independent driveway access to Route 6. The pattern and density of development is suburban, unlike the downtown. Residential developments in this subregion are served by curvilinear streets and cul-de-sacs, often without connections between adjacent developments. See **Figure 17**.

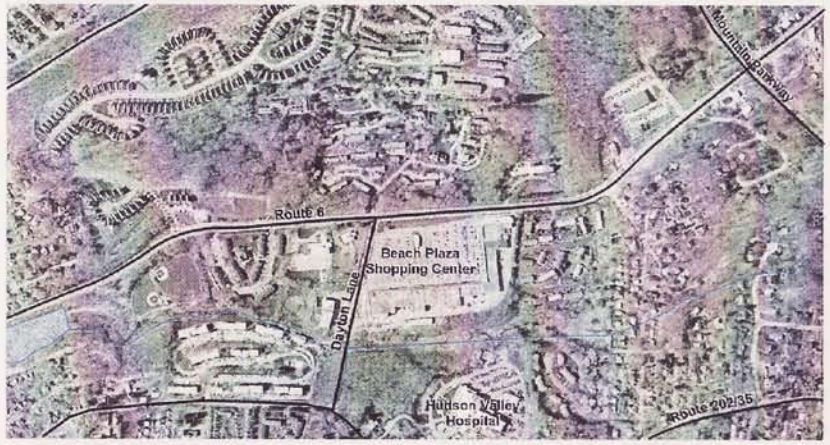


Figure 17. Beach Plaza Shopping Center Area

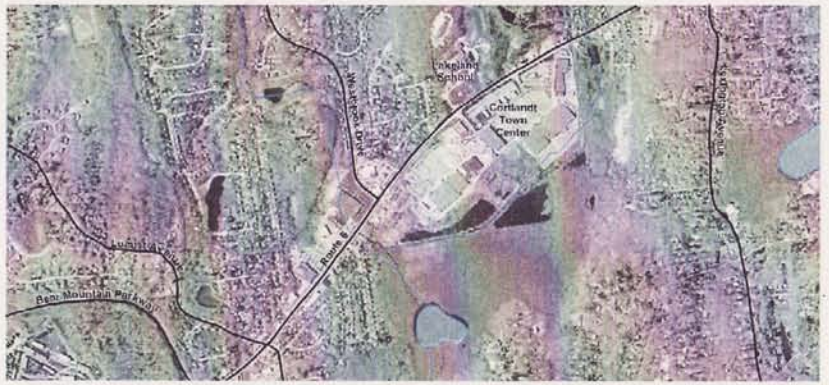


Figure 18. Cortlandt Town Center Area

3. Cortlandt Town Center Area

This subregion consists of Cortlandt's primary commercial corridor which serves local and regional demand for retail services. The Cortlandt Town Center is at the core of development with other large, stand-alone retailers, smaller automobile-oriented businesses and other stores and offices located along Route 6. See **Figure 18**. The Cortlandt Town Center replaced and expanded the former Westchester Mall. It features several "big-box" stores (including the first Wal-Mart store in Westchester County), an 11 screen movie theater plus smaller stores and restaurants served by an internal driveway that runs parallel to Route 6.

Properties along Route 6 to the west of the Cortlandt Town Center are developed predominantly with highway commercial uses. This type of development is oriented towards motorists with large parking areas in the front of the commercial establishments. Some former residences have

been converted to commercial or professional office uses in this section. There is also a school on the north side of Route 6.

There are moderate-density, suburban style single family residential neighborhoods to the north of Route 6. These neighborhoods are accessed from side streets off of Route 6. The area south of Route 6, between the Cortlandt Town Center and the Bear Mountain Parkway, includes an extensive wetland as well as a large area protected as permanent open space.

Figure 19. Northeast Cortlandt

This subregion is located in the Peekskill Hollow Brook watershed, which is the source of water supply for the City of Peekskill. Major access to the Cortlandt Town Center Area subregion is from Route 6 itself, the Bear Mountain Parkway, Westbrook Drive and Lexington Avenue.

4. Northeast Cortlandt

The primary land use in the northeast section of the Town of Cortlandt is single family residential. There are a limited number of neighborhood commercial uses along Oregon Road. This area is bounded on the north by Peekskill Hollow Brook and the Town of Putnam Valley in Putnam County, on the west by Oregon Road, on the south by Red Mill Road and on the east by the Town of Yorktown. The "Northeast Quadrant Traffic Study," prepared by TRC Raymond Keyes Associates in 1996, recommended improving traffic safety and intersection operations for the large volume of through traffic while protecting the residential character of this area. See **Figure 19**.

5. Mohegan Lake

The Mohegan Lake hamlet in the Town of Yorktown includes a mix of retail, professional office and residential uses. It has developed in a linear pattern along Route 6 and along the Mohegan Lake waterfront. Residential development includes single family homes and town homes with internal street systems. There are institutional uses (including a school and

nursing home) along Lexington Avenue north of Route 6. Along Route 6, the hamlet is pedestrian oriented in scale with sidewalks on both sides of the road and many buildings located adjacent to the sidewalks. See **Figure 20**.

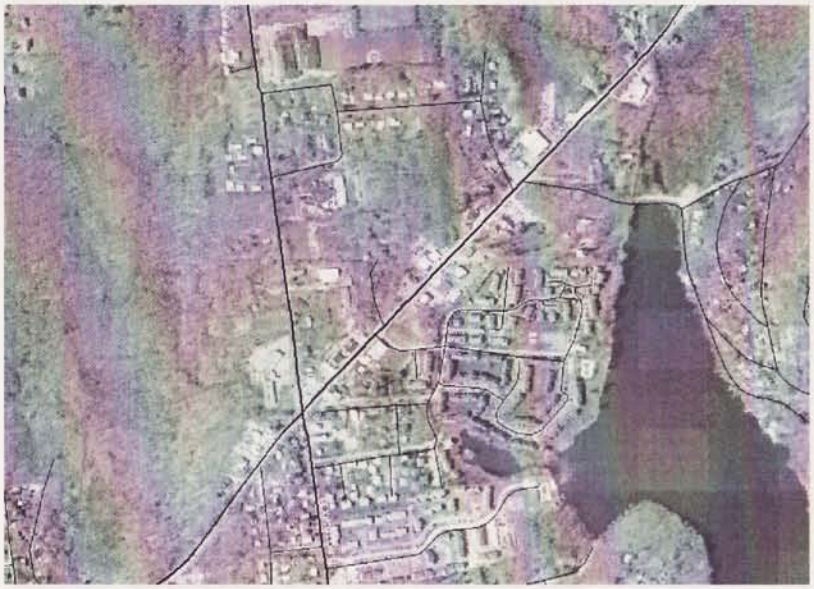


Figure 20. Mohegan Lake

Mohegan Lake itself is a large natural resource. Historically, it was attractive to native Americans for its abundance of wildlife. The area became attractive to farmers, "colonists" looking for alternative lifestyles and summer tourists. Large cattle and dairy farms operated on the east side of the lake while summer colonies and hotels flourished along the shoreline. The Mohegan Lake area was connected to Peekskill via trolley in the early part of 20th century. A small business hamlet developed along what would be designated Route 6.

The challenge facing Yorktown is how to enhance the charm of the small town business hamlet with its small proprietorships, permit traffic to move through the area in an acceptable fashion and protect and enhance the quality of life for the adjacent residential areas. Land use and transportation decisions in this subregion must be mindful of the significant natural resources.

6. Bear Mountain Parkway Triangle

The Bear Mountain Parkway Triangle encompasses the land bounded by Route 202/35, the Taconic State Parkway and the Bear Mountain Parkway Extension. See **Figure 21**. Much of the land in this subregion is undeveloped. Current zoning permits a mix of commercial and residential uses. Residences in this area have a rural aspect to them. The land has rolling terrain, forested areas and is crossed by Hunterbrook, a meandering trout spawning stream that discharges to the New Croton Reservoir of the City of New York water supply system. Lots with frontage on Route 202/35 have been disturbed or developed and sections of Sherry Brook have been piped.

Given its location, this subregion offers opportunity for formation of a new village-style hamlet with a mix of housing, commercial and institutional uses. Such a hamlet would create a gateway to the existing business area along Route 202/35 to the west and would establish an alternative

Figure 21. Bear Mountain Parkway Triangle

to the auto-oriented quality of the area today. The need to protect the Hunterbrook is paramount to Yorktowners. The nearby Sylvan Glen Park Preserve and other lands in the vicinity warrant protection.

There is a large retail plaza on the south side of Route 202/35 at Stoney Street that includes several "big box" and smaller stores. There are a number of smaller-scale retail uses and a county homeless shelter along Route 202/35 east of the shopping plaza. The lots along Old Crompond Road to the south of Route 202/35 are developed with low–density single-family residences. Further west along Route 202/35 are several retail uses located on the south side of Route 202/35. This area also includes a number of car dealerships. The uses are separated from one another and are served by independent driveways. There is no uniform design or style of development in this strip commercial area.

The area north of Route 202/35 is predominantly vacant and is zoned for single-family residences. However, access to the properties is constrained by the right-of-way reserved for the Bear Mountain Parkway and by Hunterbrook.

7. Route 202/35

The Route 202/35 subregion in the Town of Cortlandt extends along Route 202/35 (also known as Crompond Road) from the City of Peekskill east to the Lexington Avenue intersection. See **Figure 22**. This subregion includes the hamlet of Crompond, which contains converted residential cottages along with other single and two-family

Figure 22. Route 202/35

homes. Small commercial operations are located along the south side of Crompond Road. This corridor is surrounded by wooded hillsides and is located in the Hunterbrook drainage basin of the New York City watershed. North of Crompond Road is the New York State right-of-way for the potential future completion of the Bear Mountain Parkway. Changes in land use policy and traffic patterns may be needed to lessen adverse impacts on residential areas and natural resources in this subregion. Such changes could also be directed to lessen impacts to commercial areas as well to improve aesthetics and economic integrity.

E. ENVIRONMENT

Figure 23 highlights environmentally sensitive areas in northwest Westchester County. Several initiatives are underway in all or part of the study area that address particular environmental topics.

In 2003-2004, the towns of Yorktown, Cortlandt, New Castle and Putnam Valley are cooperating on a study of the area's biodiversity, led by the Metropolitan Conservation Alliance (MCA). The study will identify areas that contain a rich variety of species and offer methods to insure that they continue to exist for generations to come, in their current habitats. MCA has conducted mapping and field work. The land use policies recommended by this Plan are influenced by, and should complement, the recommendations of the biodiversity study for species and habitat protection. In addition, Yorktown and Cortlandt have received a grant from Hudsonia Ltd. for biodiversity training.

The towns of Cortlandt and Yorktown are two of the ten Westchester County municipalities preparing the Comprehensive Croton Watershed Water Quality Protection Plan ("The Croton Plan") in cooperation with Westchester County. This Plan, to be completed in draft form in 2004, is to present an analysis of water quality conditions and threats in the Croton Watershed and an outline of measures that be taken at every level of government and in the private sector to prevent degradation or improve water quality. Many of the recommendations will relate to land use, impervious surfaces and stormwater management. The southern half of the study area in Yorktown and the southeast section of Cortlandt are within the Croton Watershed.

F. BUILDOUT UNDER CURRENT ZONING

As part of the depiction of existing conditions, an inventory was assembled in 2000 of all development applications - subdivisions and site plans - that were being processed by municipal boards in the three municipalities. The collected data are summarized in **Figure 24**. A total of 31 residential subdivisions were identified which, in total, proposed the creation of 1,794 new dwelling units. The survey also identified 33 non-residential development proposals, most of minor scope and involving renovation of existing space.

A forecast of the remaining potential for development under existing zoning was then prepared. The "buildout" analysis examined potential development for all vacant and underutilized parcels as identified by the three municipalities.

Figure 23. Sensitive Environmental Areas

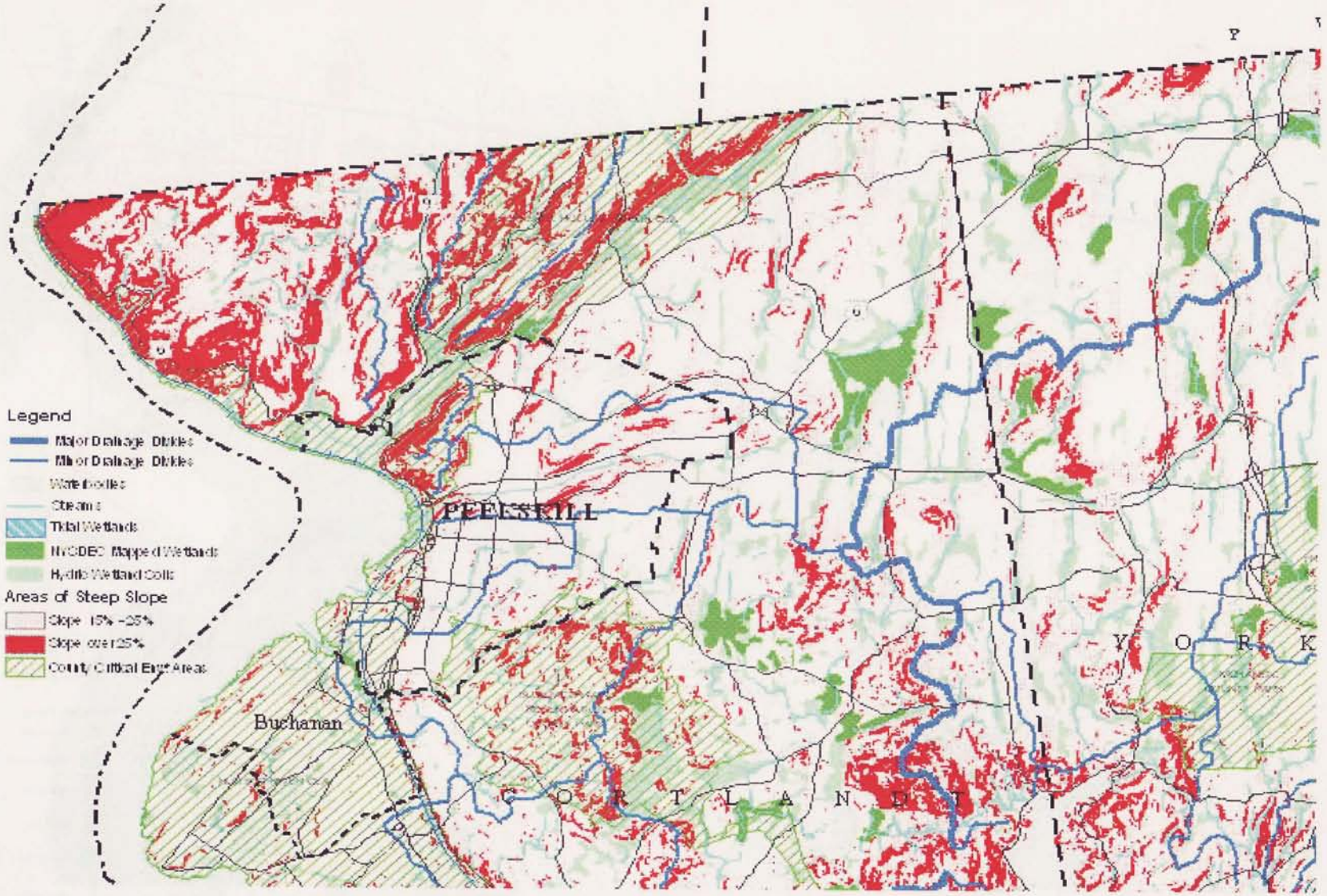


Figure 24. Development Projects the Application Stage (2001)

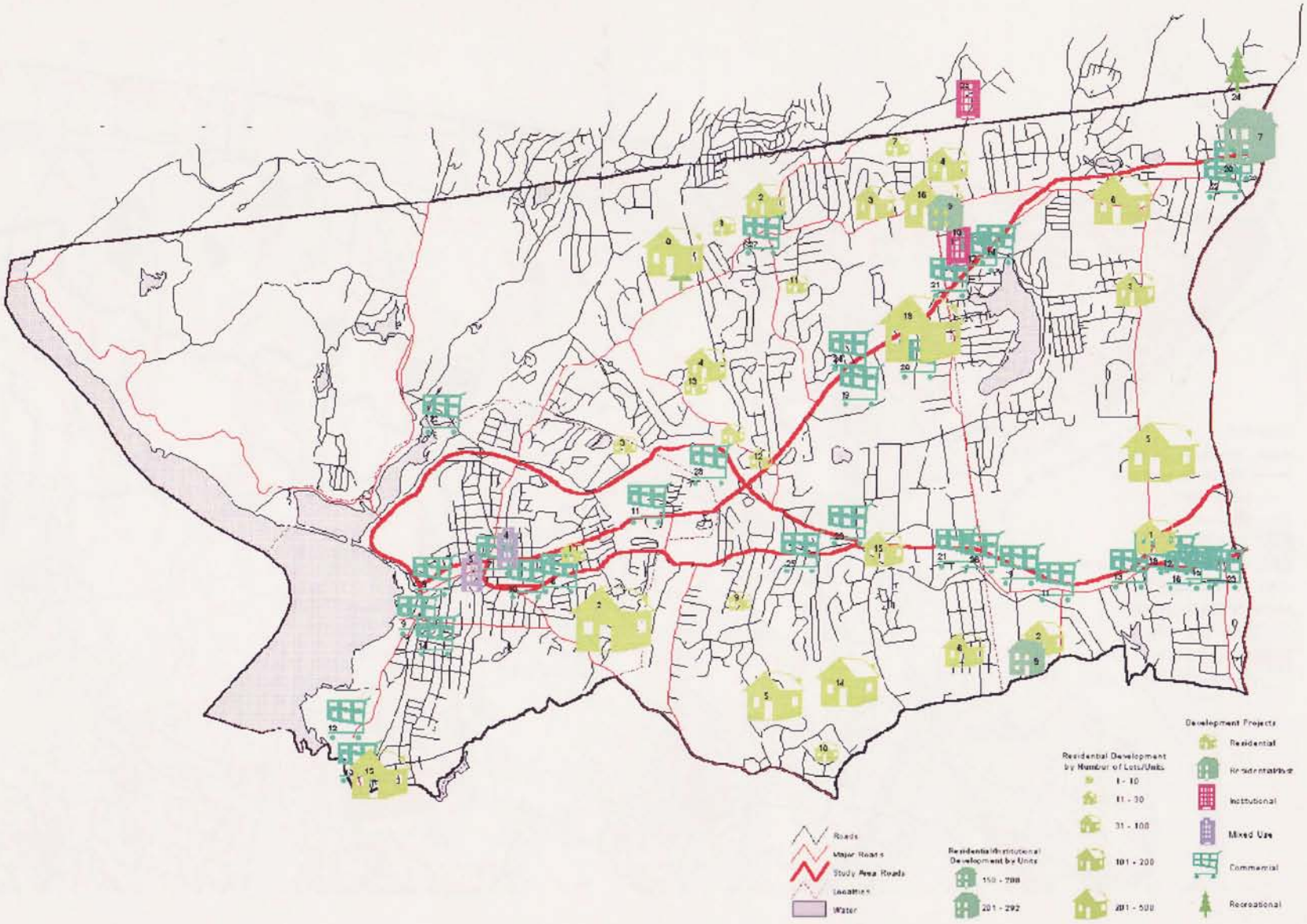
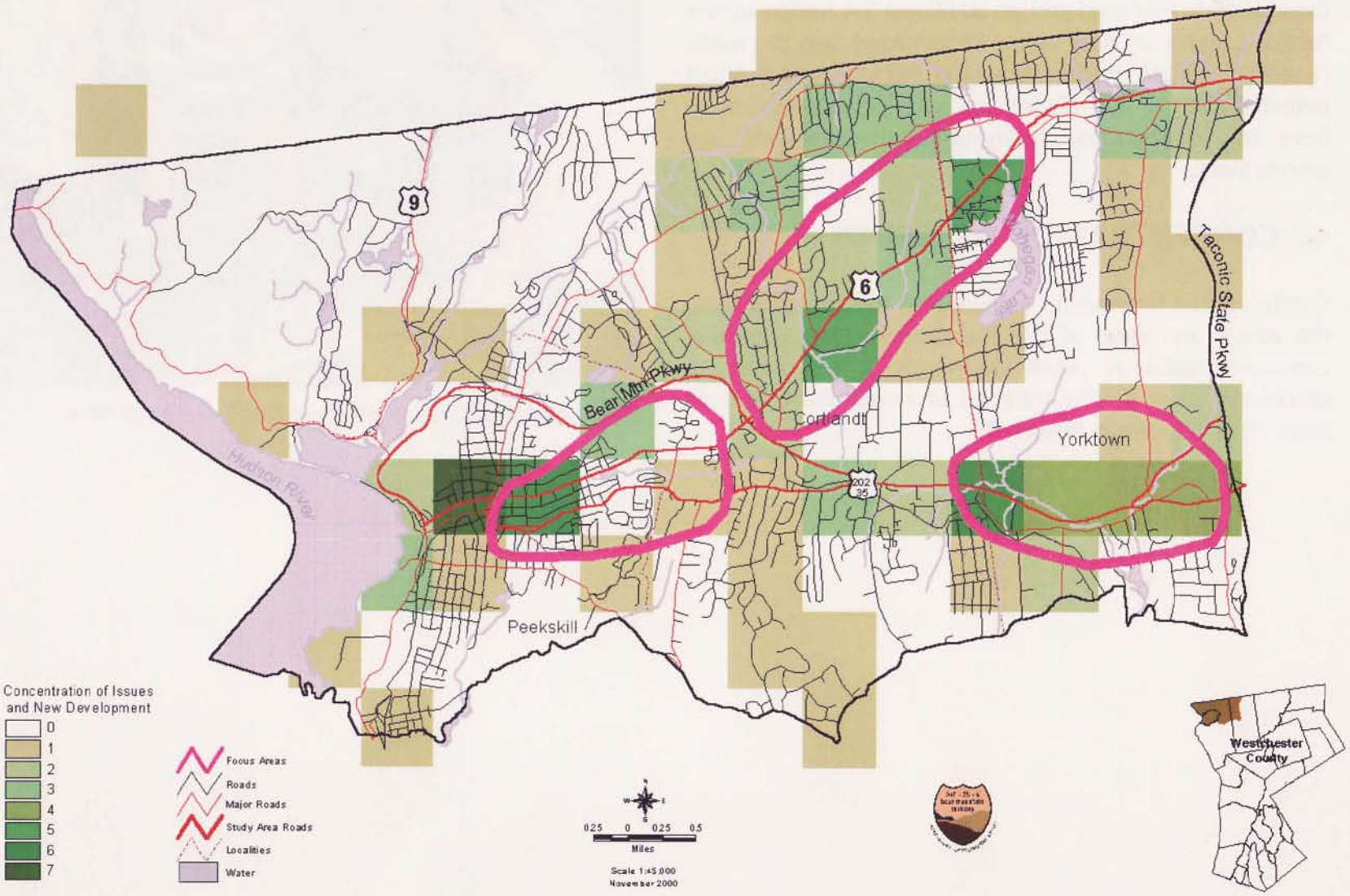


Figure 25. Concentration of Issues and New Development



This buildout analysis illustrated that a significant amount of new development could occur in the study area, approximately an additional 1,600 dwelling units beyond those already proposed and an additional 2.4 million square feet of commercial floor area. Stakeholders and the public raised substantial concern regarding the identified buildout potential and the possible impacts such development could have on transportation, community character and the environment.

G. CONCENTRATION OF ISSUES

Combining the information gathered on existing conditions, the advice and ideas of the Stakeholders Committee and comments made at public workshops, it is possible to graphically show a "concentration of issues" for the study area. This is shown in **Figure 25**.

Public input was the basis for identifying the 50 early action items.

III. SHORT TERM ACTION PROJECTS

One of the first decisions made by the Steering Committee was to promote action to fix problems that could be easily resolved. While it was understood that the study would need to move through many steps, technical analyses and public meetings before arriving at long range visions and solutions, it was equally clear that almost everyone familiar with the study area could identify one or more simple measures that could be taken to improve existing problems and conditions.

A public workshop was held in April 2000 to seek suggestions from residents and business owners. A long list of suggestions was the result. This list was reviewed by the Steering Committee and the study consultant to determine the feasibility of completing the actions in a short timeframe.

Approximately 50 short term action projects were selected by the Steering Committee. The selected actions included improvements to traffic control, signage, transit, pedestrian and bicycle facilities and streetscapes. The remaining suggestions were incorporated into the analysis of long-term actions.

The project selection review process included consideration of the results of the intersection analysis, presented in **Chapter II**. In that analysis, each failing intersection was studied to determine the type of improvement that would be needed to improve all levels of service at all lane groups for all time periods to Level of Service (LOS) D or better for current conditions. In summary, it was determined that four intersections could be improved by signal timing adjustments only, 12 intersections required changes in geometric configuration, two intersections required the installation of traffic signals and six intersections required no improvements.

The intersections that could be improved without significant physical construction became likely candidates for short term action projects. The addition of a right turn lane from Route 202/35 westbound onto Lexington Avenue northbound is an example of a completed short term action project. This change significantly reduced delays at the intersection for motorists traveling westbound.

Westchester County, the NYS Department of Transportation and the three municipalities made a commitment to advance the selected actions while the plan was being developed. The members of the Steering Committee also agreed to emphasize the connection between land use and transportation in their day-to-day decision making, which includes the review of development applications.

This chapter identifies the selected short term action projects, the responsible party and the status of implementation.

A. TRAFFIC CONTROL

1. Peekskill

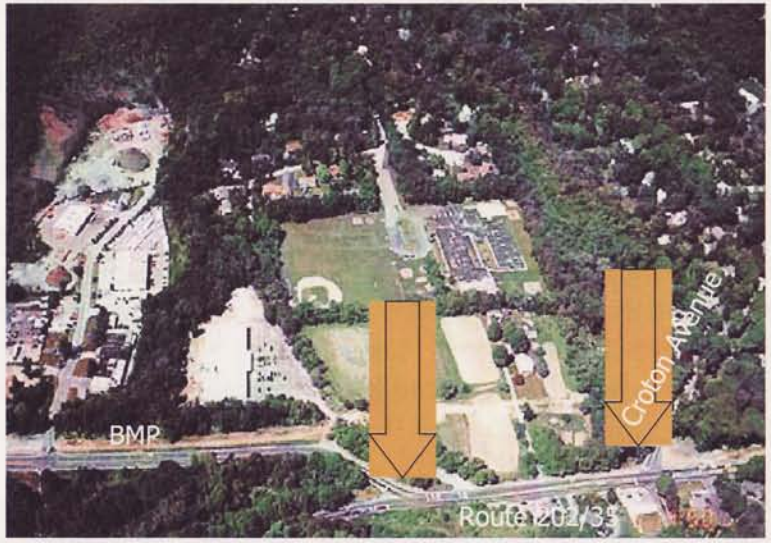
Route 9/BMP at Annsville Circle Intersection. Several issues with the Route 9/BMP intersection and the Annsville Circle were identified by study participants. The first issue investigated was to find a way to reduce the length of the southbound queues on the BMP (toward Route 9 South). It was determined that the signal timing needs to be investigated. NYS DOT recommended the installation of additional signage to support the eastbound right turn only to the intersection and to relocate the truck advisory sign on traffic restrictions on the northbound lane of Route 9. These are pending and may be completed by spring 2004.

Route 9 at Annsville Circle and Bear Mountain Parkway

The second concern was for the safety of vehicles changing lanes within the Annsville Circle. A NYS DOT investigation of operation of the circle concluded that no further changes to the signs and pavement markings of the circle were needed.

2. Cortlandt

The study participants identified the need for 16 traffic control projects in Cortlandt at public meetings. Many of these projects were in the planning stage before the Sustainable Development Study began. Through the efforts of the Steering Committee, funding for several of these projects became available. The scope of some projects was modified when a potential was identified that the land use and environmental recommendations to be made by the final Plan could result in alternative solutions.



BMP & Route 202/35 and Route 202/35 & Croton Avenue intersections

a. Traffic Signal Coordination on Route 202/35 at BMP and Croton Avenue. A question was raised about the need to coordinate the traffic signal lights at the BMP and Route 202/35 intersection with the traffic signal lights at the Croton Avenue and Route 202/35 intersection. An analysis by NYS DOT was conducted as part of the Study Corridor Signal Optimization Project. Intersection data was collected including periods related to school travel. An analysis using Synchro traffic modeling software was conducted. Signal timing changes were recommended. Implementation is pending.

b. Route 202/35 at Croton Avenue. A need was expressed to reduce long traffic queues on northbound Croton Avenue at Route 202/35, particularly to better accommodate the traffic from Walter Panas High school. To alleviate the problem, the Town of Cortlandt is negotiating with developers to fund improvements for a new left turn lane at this intersection. The project is expected to be complete by summer 2005.

c. Route 202/35 at Conklin Avenue and at Lafayette Avenue. Cortlandt has initiated an intersection analysis to determine the impact of left turn movements on traffic flow from Route 202/35 to Conklin Avenue. Cortlandt has identified the need for a dedicated left turn lane on Route 202/35 at this intersection to improve safety. This improvement will be included in the Route 202/35 project at Lafayette Avenue.

Additionally, the need was identified for installation of a traffic signal and left turn lane on Route 202/35 at Lafayette Avenue. The Town has received authorization from NYS DOT to proceed with the design. The project is expected to be completed by fall 2005. In early 2002, budget constraints resulted in inadequate funds being available for these improvements. It is important to note that funding became fully available through the efforts of the Sustainable Development Study participants.

Route 202/35 and Lafayette Avenue

d. Cortlandt Town Center Access. Workshop participants and the Steering Committee identified numerous potential changes to the Route 6 and Westbrook Drive intersection and the area encompassing the Cortlandt Town Center. It was recommended that the westerly exit from the Cortlandt Town Center on Route 6 at Westbrook Drive be

Route 6 , Westbrook Drive and Cortlandt Town Center driveway

changed as follows:

- Change the middle lane to a second left turn lane.
- Change the right turn lane to a combined right/through lane.

Before these changes can be made, the receiving lanes on Route 6 westbound must be widened to accept traffic from two left turn lanes. This widening should occur when a dedicated right turn lane is installed on southbound Westbrook Drive at Route 6. e without impacting pedestrian movement.

A final improvement to this intersection will involve the installation of an access drive behind (to the south of) Wendy's and a Mobil station. This new access drive will connect to the Cortlandt Town Center driveway and improve the safety of access to/from these existing businesses on the south side of Route 6 west of the Cortlandt Town Center/Westbrook Drive intersection.

All of the above actions require NYS DOT permits. Since each revision in this area would be interdependent on the others, the projects will be undertaken in the order presented above. The overall plan will require an environmental review to determine the potential impact on the wetlands adjacent to the Wendy's and Mobil sites.

The preliminary results of a traffic and safety review of the intersection includes a recommendation for installation of a "No Turn on Red" sign at Westbrook Drive in order to protect pedestrians crossing Route 6 and Westbrook Drive. In addition, installation of "No left turn" signs appears to be needed along Route 6 westbound in order to eliminate the westbound Route 6 left turn movements into the commercial driveways on the south side of Route 6. Frequently, vehicles waiting to turn block traffic on Route 6 thereby compromising traffic through the intersection. NYS Dot will assist with the development of plans and expediting approvals. Improvements are expected to be complete by spring 2005.

e. Route 6 Left Turns. The Town of Cortlandt has submitted a formal request to NYS DOT to restrict left turns out of Wendy's, ShopRite and Regina Avenue onto Route 6.

f. Westbrook Drive, Red Mill Road and Oregon Road. Participants at public meetings suggested that Cortlandt

relocate the stop bar at the traffic light on eastbound Oregon Road to be closer to the intersection at Westbrook Drive and Red Mill Road. This project was completed by the Town of Cortlandt in spring 2001.

g. Oregon Road, Lockwood Road and Old Oregon Road. Cortlandt has proposed improvements to lane striping and other safety measures at Oregon Road, Lockwood Road and Old Oregon Road. The improvements would be funded by a nearby developer.

h. Route 6 at Baker Street. Cortlandt has proposed the addition of a shoulder acceleration/deceleration lane and a traffic light at the Baker Street intersection with Route 6 as an interim improvement to reduce congestion. NYS DOT will review accident data and evaluate the feasibility of installing a light. Another suggestion was made that the curbcuts on Route 6 in front of the beverage store (across from Baker Street) should be eliminated and new access provided to the store via a connection to the Cortlandt Town Center access road.

i. Route 202/35 at Old Crompond Road. In order to reduce congestion on Old Crompond Road. Cortlandt has suggested that a left turn lane be added on the Old Crompond Road approach to Route 202/35 and that a stop bar be painted on Route 202/35 eastbound. The feasibility of these actions are to be considered as part of the analysis of the Lexington Avenue/Route 202/35 intersection, discussed below.

j. BMP and Route 202/35. The public suggested that there was a need to restripe the Bear Mountain Parkway approach to Route 202/35. No short term improvements have been identified.

k. Bypass Road from Route 6 to Lexington Avenue. One long term improvement identified and evaluated during the sustainable development study is the construction of a "Route 6 Bypass" that would extend from Cortlandt east through Yorktown to the east side of Mohegan Lake hamlet. (See **Chapter IV, Scenario 4**.) It has been determined that this road could be constructed in phases. One possibility is to construct the bypass from Route 6 across from Regina Avenue to Lexington Avenue just north of Mohegan Manor. This road would be constructed on property owned by a developer who has presented a multi-family development proposal to the Town showing this road improvement. If at the completion of the application review process the Town finds the development proposal in accordance with planning policy and zoning, such a two-lane bypass would provide some relief at the Route 6/Lexingtaon Avenue intersection.

3. Cortlandt/Yorktown

a. Route 202/35 at Lexington Avenue. The municipalities and the public identified a need to reduce the long traffic queues on Route 202/35 and on Lexington Avenue due to increasing left turn movements at and near the intersection. NYS DOT has initiated a Lexington Avenue/ Route 202/35 intersection analysis to determine the impact of left turn movements on the traffic flow on both Route

202/35 and Lexington Avenue. NYS DOT is in the process of redesigning the intersection. The redesign will include an additional left turn lane on the eastbound approach to the intersection. The intersection work is scheduled for construction in fall 2004.

A right turn lane from Route 202/35 onto Lexington Avenue has been constructed on the westbound approach to the intersection. This project was completed in summer 2002.

b. Route 6 at Lexington Avenue. There are long queue lengths on the through eastbound lane of Route 6 approaching Lexington Ave. The long queue prompts some vehicles to use the left turn lane as a bypass. The use of the left turn lane appears to add to the congestion and to increase the accident potential at the intersection. The Town of Cortlandt would like NYS DOT to construct a right turn lane from eastbound Route 6 onto Lexington Avenue. Field reviews indicate that construction of a right turn lane would be a major project, not a short term action.

Route 6 and Lexington Avenue

As a short term action, the Town of Cortlandt has requested NYS DOT to repaint the "Left Turn Only" indicators on Route 6 eastbound. This work will be part of yearly maintenance of Route 6 and should be completed in fall 2004.

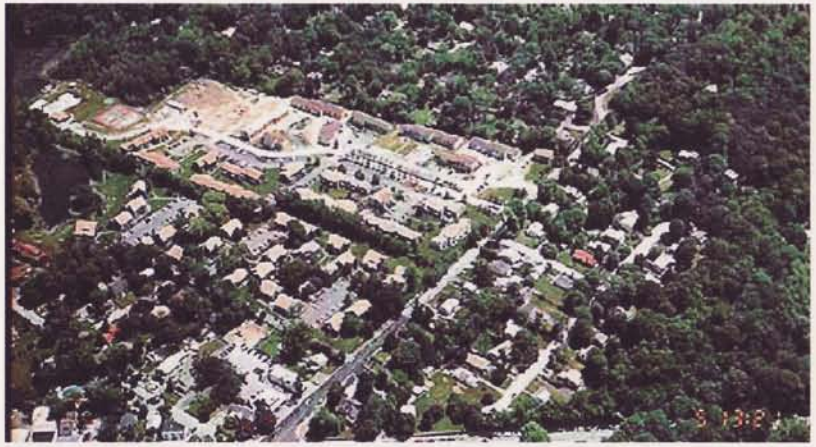
In addition, NYS DOT has adjusted the Lexington Avenue/ Route 6 intersection traffic signal timing in order to reduce

A right turn lane has been added on Route 202/35 westbound at Lexington Avenue. Additional improvements will be made to improve efficiency.

the congestion on all approaches to the intersection. Further investigation is needed to determine the feasibility of coordinating the signal timing with the Route 6/Strawberry Road traffic signal.

4. Yorktown

a. Route 6 at Mohegan Avenue. Yorktown had requested NYS DOT to install a traffic signal at the intersection of Route 6 and Mohegan Avenue and to review the length of the left turn lane on Route 6. A private developer installed a new signal at the intersection in fall 2002. The signal light timing has been adjusted but will be further investigated as part of the NYS DOT's Corridor Signal Optimization project which includes coordination of signals on Route 6 at Strawberry Road and Lexington Avenue. NYS DOT is reviewing the left turn lane length to determine if there is a need to reconfigure the lanes.



Lexington Avenue and Route 6

b. Route 202/35 at Taconic State Parkway. Yorktown requested NYS DOT to install a traffic signal on Route 202/35 eastbound to allow left turn movements to the northbound Taconic State Parkway. The improvement was completed by NYS DOT as part of the Taconic State Parkway widening project. The signal will be in operation when the Taconic State Parkway project is complete.

c. Route 6 through Mohegan Lake Hamlet. Yorktown submitted plans to NYS DOT for a work permit to install flexible tubular markers in the center turning lane along Route 6 at Mohegan Lake. Yorktown will pay for the requested improvements. The project should be completed by fall 2004.

B. SIGNAGE

1. Peekskill

a. "No Engine Brakes" Sign. The City of Peekskill would like to encourage truckers to reduce excessive noise by not using engine brakes when passing through downtown Peekskill. Westchester County has offered to provide "No Engine Brakes" signage to the City. If Peekskill decides that the signage is appropriate, the City would erect the signs and be responsible for maintenance.

b. Bear Mountain Parkway at Frost Lane. The City requested NYS DOT to install "Approaching Intersection" signage along the Bear Mountain Parkway before the Frost

Lane intersection to provide better warnings for drivers. NYS DOT investigated this request and installed the signs in 2001.

c. Route 9. The City has requested that an existing sign on Route 9, informing drivers of "Truck Restrictions on the Bear Mountain Parkway," be moved south of its present location. NYS DOT Traffic and Safety division will relocate the sign.

2. Cortlandt

Bear Mountain Parkway truck restriction sign needs to be relocated.

a. Bear Mountain Parkway at Route 202/35. In order to reduce the confusion experienced by many motorists heading west on Route 202/35 toward the Bear Mountain Parkway entrance, Cortlandt has requested NYS DOT to revise the signage. Drivers mistakenly turn right into the bowling lanes driveway at Maple Row when they see the directional sign to Peekskill, Bear Mountain and Fishkill. The

Bear Mountain Parkway route sign needs to be relocated.

Town has also requested that a directional sign to Route 6 be added at this location. NYS DOT will relocate the "Bear Mountain Parkway Ahead" sign located on the east side of Maple Row to the west side of Maple Row and will add a directional sign for Route 6. NYS DOT has also added a "Signal Ahead" sign on the Bear Mountain Parkway approach to Route 202/35.

b. Route 6 at Barmore Hill. Cortlandt requested NYS DOT to install additional signage and striping on Route 6 at the bottom of the Barmore Hill in order to reduce the number of vehicles cutting into the queue on the through lane of Route 6. NYS DOT has evaluated the request and expects to install additional signage and striping in fall 2004.

c. Route 6 at Regina Avenue and ShopRite. Cortlandt requested NYS DOT to place "No Left Turn" traffic restrictions into and out of Regina Avenue, ShopRite and Wendy's. NYS DOT will consider this request as part of a corridor level

access study.

3. Cortlandt/Yorktown

Lexington Avenue, Pine Grove and Croton Avenue
NYSDOT has completed the investigation of installing "Approaching Intersection" signage along Route 202/35 for Lexington Avenue, Pine Grove and Croton Avenue. NYS DOT will install new signs where warranted.

4. Yorktown

Route 202/35. NYS DOT has installed a new and larger sign on Route 202/35 eastbound at bottom of the hill near B. J.'s Warehouse. The sign advises drivers that Taconic State Parkway traffic should stay in the right lane and all other traffic should stay in the left lane.

New sign warning Taconic State Parkway drivers to stay right.

5. Area-wide

Directional Signs. The study municipalities have been assisting Metro-North Railroad in its project to identify locations for installation of directional signs to Hudson Line Stations.

The study municipalities have requested installation of hospital directional signs on eastbound Route 202/35 and at the Bear Mountain Parkway/Division Street interchange. Westchester County will work with Hudson Valley Hospital to develop an access plan. The plan will be submitted to NYS DOT for review and implementation.

C. TRANSIT

1. Bus Shelters

Westchester County Department of Transportation is inventorying existing bus stops.

Participants at the public meetings indicated that there should be bus shelters on Route 6 at the Beach Shopping Center in Peekskill. Westchester County has approached the developer of the property and reached an agreement for the developer to install concrete pads for shelters. Once installed, Westchester County will install new bus shelters.

2. Park and Ride Lots

Participants at the public meetings suggested that to reduce congestion in the study area, it would be appropriate to encourage the use of park and ride lots. Yorktown, Cortlandt and Peekskill will review the findings of the Westchester County "Park and Ride Master Plan" and investigate appropriate park and ride locations.

3. Bus Stops

Participants at the public meetings suggested that bus stops in the study area be enhanced. Westchester County is conducting an inventory of bus stops and will identify and program improvements.

D. PEDESTRIAN AND BICYCLE FACILITIES

1. Peekskill

a. Pedestrian Crossings. The City of Peekskill, as well as participants at the public meetings, expressed a need for improvements to pedestrian safety at the Frost Lane and Carhart Avenue crossings of the Bear Mountain Parkway. In response, NYS DOT investigated to determine the appropriate location of a crosswalk across the Bear Mountain and decided not to relocate the existing crosswalk.

Changes to the pedestrian crossings of the Bear Mountain Parkway at Frost Lane and Carhart Avenue may be made in the future.

Over the long term, relocation of the existing pedestrian signals may be required along with construction of a pedestrian path Carhart Avenue to provide a link to the school. In the interim, NYS DOT has upgraded the pedestrian and flashing signals. NYS DOT will investigate redesign of the crossing as part of the analysis for improvements to the Bear Mountain Parkway.

b. Sidewalks. Westchester County has provided Community Development Block Grants (CDBG) to Peekskill for the construction of sidewalks in the City. Peekskill has

used the funding to construct new sidewalks on Park Street linking to Tompkins Park and on Howard Street and North James Street linking to Pugsley Park. New sidewalks will be constructed on North Division Street between Main Street and Monument Park.

2. Bear Mountain Parkway

The three study area municipalities have asked NYS DOT, with Westchester County's support, to include a pedestrian/ bicycle pathway along the Bear Mountain Parkway as part of the long range plan for the corridor. NYS DOT will investigate the feasibility as part of the Bear Mountain Parkway study and identify pedestrian and bicycle pathway alternatives which have will have the capability to connect with existing paths and trailways.

3. Cortlandt

a. Route 6 at Westbrook Drive. Cortlandt has requested NYS DOT to lengthen the time for the pedestrian crossings of Route 6 and Westbrook Drive between Kohl's and Cortlandt Town Center and to install a "No turn on red" sign for the westbound right turn lane from Westbrook Drive onto Route 6. NYSDOT has upgraded one set of the pedestrian activated lights crossing Route 6 and has installed the "No turn on red" signs.

Cortlandt has also identified a need for a pedestrian signal across the Cortlandt Town Center access drive. The NYS DOT has evaluated this request and has determined that the

The intersection of Route 6 and Westbrook Drive is scheduled for a series of improvements.

installation of a pedestrian signal is warranted across the access drive. Construction is expected to be completed in mid-2005.

b. Route 6 at Locust Avenue. Cortlandt has requested NYS DOT to install a pedestrian crossing signal to permit crossings of Route 6 at Locust Avenue. NYS DOT is evaluating the town's request.

c. Sidewalks. As of spring 2004, Cortlandt is installing curbs and a sidewalk along the north side of Oregon Road between Westbrook Drive and Adams Rush Road. A local developer has funded this project.

4. Yorktown

a. Lexington Avenue. Participants at the public meetings noted that Lexington Avenue lacks proper pedestrian facilities south of Route 6 in the Mohegan Lake area. NYS DOT has investigated the road and determined that an inadequate drainage system is impacting pedestrian movement along the east side of Lexington Avenue. NYS DOT will improve the drainage system and shoulder area along the east side of Lexington Avenue to provide for a pedestrian path.

b. Sidewalks. Westchester County has provided Community Development Block Grant (CDBG) funding to Yorktown for the construction of sidewalks in the town. Yorktown used recent funding to construct new sidewalks on East Main Street between Route 6 and Route 132 in fall 2001. The Town has applied for additional CDBG funding for sidewalks and streetscapes improvements in the Mohegan Lake hamlet.

c. Bicycle Racks. Prior to this study in 2001, Yorktown installed two bicycle racks at the John C. Hart Memorial Library on East Main Street in Shrub Oak.

d. Pedestrian Bridge over Taconic State Parkway. NYS DOT is installing a pedestrian bridge over the Taconic State Parkway, at Yorktown's request, as part of the reconstruction of the Parkway. Yorktown is pursuing additional trail connections to FDR State Park among other sites.

E. STREETSCAPE

1. Peekskill

Downtown Preservation and Improvements. Peekskill residents at the public meetings recommended the preservation of historic buildings along Main Street. The City of Peekskill administers a low interest loan program for façade renovations for business and commercial business owners.

Westchester County has provided Community Development Block Grant funding and design assistance to Peekskill to improve the plaza in front of Bohlmann Neighborhood Center

Westchester County and the City of Peekskill have teamed to improve several of the parks in the downtown.

and Pugsley Park. The county has designed these new parks to include new landscaping, fencing, lighting, benches and streetscape elements. The projects were completed in 2001 and 2002.

The City has developed a three-year sidewalk program and will apply to the County for additional funding for more projects in the next CDBG funding cycle.

2. Yorktown

Hamlet Improvements. Yorktown has undertaken streetscape improvement programs in the town's hamlets. Yorktown completed streetscape improvements in Shrub Oak in 2001. The work included construction of two sidewalks, a pocket park and new lighting. The Town is considering further improvements.

The Town of Yorktown has placed two bicycle racks at the John C. Hart Library in Shrub Oak.

The Town of Yorktown has included the Strawberry Road/Route 6 intersection as part of the Town's beautification program

Yorktown has targeted the Mohegan Lake hamlet area for streetscape improvements and has applied to Westchester County for CDBG funding.

3. Cortlandt

"Cortlandt Boulevard." Cortlandt has met with NYS DOT to discuss various streetscape improvement opportunities for Route 6 including a landscaped center median, additional

landscaping, decorative lighting and removal of utility poles. The NYS DOT is evaluating the concepts. Cortlandt is considering the formation of a Transportation Improvement District to pay for a portion of the improvements.

4. Area-wide

Adopt an intersection. The study municipalities have requested NYS DOT to initiate an "Adopt an Intersection" program to encourage new plantings, landscaping and general clean up of intersections in the study area. The Town of Yorktown initiated such a program on its own. The program now includes several intersections such as the Strawberry Road/Route 6 intersection.

The municipalities will continue to identify intersections that may need improvement. NYS DOT will expedite the needed permits for construction in State right-of-way for the beautification projects. The municipalities will encourage civic groups and businesses to participate in the program.

F. TELECOMMUTING AND CARPOOLING

Participants at the public meetings noted a need for more information on telecommuting and car-pooling options.

NYS DOT has approached MetroPool to initiate a carpool/ vanpool program centered on the Cortlandt train station. The program would include reserved parking spaces for participants, which would be located close to the train platform entrances. MetroPool has also promoted a pilot program with the youth football teams in Cortlandt that encourages carpooling.

Westchester County has made information available to major employers at sites in the study area on the benefits of telecommuting. This information has been provided in conjunction with the Westchester County Smart Commute Program. The programs are expected to continue.

MetroPool

Westchester's SMART COMMUTE Program

IV. ALTERNATIVES FOR LAND USE AND TRANSPORTATION

The Plan was developed, in part, utilizing the results of testing alternative land use and transportation improvement scenarios through a land use and transportation model. This chapter presents the alternative scenarios developed through public meetings, workshops and steering committee discussions, the methodology used to develop and apply the testing model and the results of the process. The first round of testing led to a refinement of "preferred alternatives" and to further testing. The chapter concludes with a report on this process.

A. ALTERNATIVE SCENARIOS

Five future land use patterns and five future transportation system configurations for the study area were developed from suggestions and discussions by the Stakeholders Committee, the Steering Committee and at public workshops.

The purpose of defining these "alternative futures" was to permit an analysis that would show how different development patterns and different specific transportation system improvements would affect the study area. Based on the results, the study participants could begin to assess which land use patterns combined with specific transportation projects would come closest to meeting the consensus objectives for the future of the study area. (See **Chapter I** for a listing of the consensus objectives.)

1. Land Use Scenarios

The five alternative land use scenarios are described below and illustrated in **Figure 26**. Each scenario assumes that existing zoning regulations would not be changed so as to permit more residences or more square feet of commercial building space than is currently permitted.

Scenario 1: Full Build-Out. All buildable, vacant parcels are developed according to existing zoning regulations.

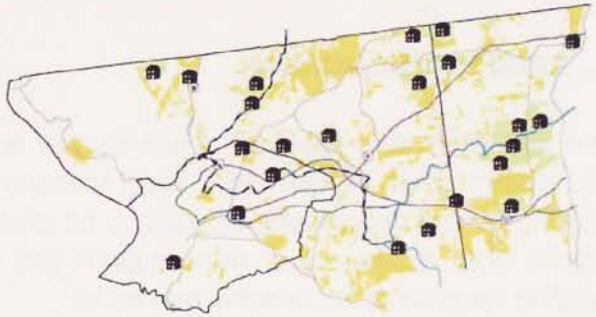
Scenario 2: Enhanced Centers. Potential development on vacant parcels larger than five acres is shifted to three central locations: Crossroads Plaza in Peekskill, Cortlandt Town Center in Cortlandt and the Bear Mountain Parkway Triangle area in Yorktown.

Scenario 3: Reduced Development. Potential development on vacant parcels larger than five acres, located outside of three target areas, is reduced by 50%. Development within the target areas is as permitted by existing zoning regulations. The three target areas are: along Main Street in Peekskill, along the Route 6 corridor in Cortlandt and along the Route 202/35 corridor in Yorktown.

Scenario 4: Reduced Development and Transfer.

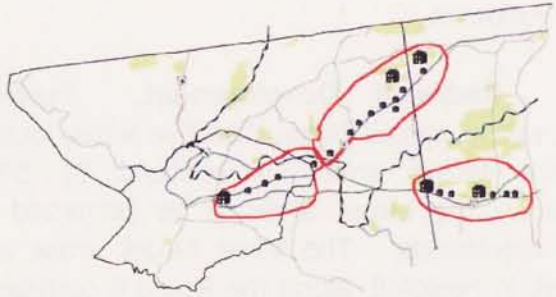
Figure 26. Land Use Scenarios

Scenario 1: Full Build-Out
All current vacant lands would be developed according to present zoning.



Scenario 2: Enhanced Centers
All potential development on vacant lands would be shifted to three central locations. All vacant lands would be preserved for open space.

Scenario 3: Reduced Development
Potential development on vacant lands outside three target areas would be reduced by 50%. Development will remain the same within the target area.



Scenario 4: Reduced Development and Transfer
Potential development on vacant lands outside the target areas would be reduced by 50%, then shifted to lands within the target areas.

Scenario 5: Limit Development
There would be no future development on the vacant lands.

Potential development on vacant parcels larger than five acres, located outside of the three target areas, is reduced by 50%. This reduced level of development is shifted (transferred) to land within the target areas. The vacant parcels outside the target areas remain undeveloped and preserved as open space.

Scenario 5: Limit Development. No future development on any vacant parcel larger than five acres within the study area.

2. Transportation System Scenarios

The five alternative transportation system improvement scenarios are described below.

Scenario 1: Bear Mountain Parkway Connection. This scenario creates a limited access facility extending from the Taconic State Parkway west to Route 9 in Peekskill. It is accomplished through construction of a limited access connection between the Bear Mountain Parkway Extension end point at Route 202/35 in Yorktown and the Bear Mountain Parkway end point at Route 202/35 in Cortlandt.

Scenario 2: Route 202/35 Widening. This scenario creates a multi-lane Route 202/35 boulevard between the Bear Mountain Parkway Extension end point at Route 202/35 in Yorktown and the Bear Mountain Parkway end point at Route 202/35 in Cortlandt. The new Route 202/35 would have parallel service roads in sections. Some commercial establishments along the south side of Route 202/35 would be limited to rear entrances only from Old Crompond Road.

Scenario 3: Route 6 Widening. This scenario creates a seamless four-lane facility between the Taconic State Parkway and the Peekskill city line. It includes the widening of Route 6 through the Mohegan Lake hamlet to a four-lane facility.

Scenario 4: Route 6 Bypass (One-Way Pair). This scenario converts the existing Route 6 through the Mohegan Lake hamlet into a one-way eastbound road. A new road is created to serve as Route 6 westbound. This one-way pair configuration would extend from the Route 6/Strawberry Road/East Main Street intersection on the east to a point on Route 6 in Cortlandt west of the Lexington Avenue intersection. In essence, the new westbound road would serve as a Mohegan Lake hamlet bypass.

Scenario 5: Lexington Avenue North Extension. This scenario extends Lexington Avenue north from the vicinity of the Strawberry Road/Red Mill Road intersection to Peekskill Hollow Road in the Town of Putnam Valley, allowing for a direct route from Putnam Valley and Northeast Cortlandt to Route 6.

B. LAND USE AND TRANSPORTATION MODEL

The land use and transportation model used in this study was based on the New York Metropolitan Transportation Council's

regional "Interim Analysis Method and Best Practice Model." The model was modified to reflect conditions within the study area in several specific ways:

Transportation Analysis Zones. The Transportation Analysis Zones (TAZs) are geographical areas used to group trip origins and destinations. The trip data by TAZ is used to calculate travel demand over the transportation network. The large TAZs defined in the Best Practice Model were subdivided into smaller areas so as provide more detail and precise results for the study area. The TAZs that were utilized are shown in **Figure 27**.

Origin and Destination Survey. The Origin and Destination Survey completed as part of this study (discussed in **Chapter II**) was used to determine the travel flow among the Traffic Analysis Zones and to calibrate the model.

Programmed Improvements. The current, adopted multi-year regional Transportation Improvement Program (TIP) was reviewed to identify projects that would add significant capacity to the study area's roadway system. The completion of the Taconic State Parkway widening was the only project identified. The model was modified to incorporate this project.

Intersection Improvements. A number of intersection improvements (including the installation of traffic signals, signal timing changes and geometric changes) are identified in this study and recommended for implementation to correct existing operational problems. The modeling assumed that these improvements would be in place when forecasting future conditions.

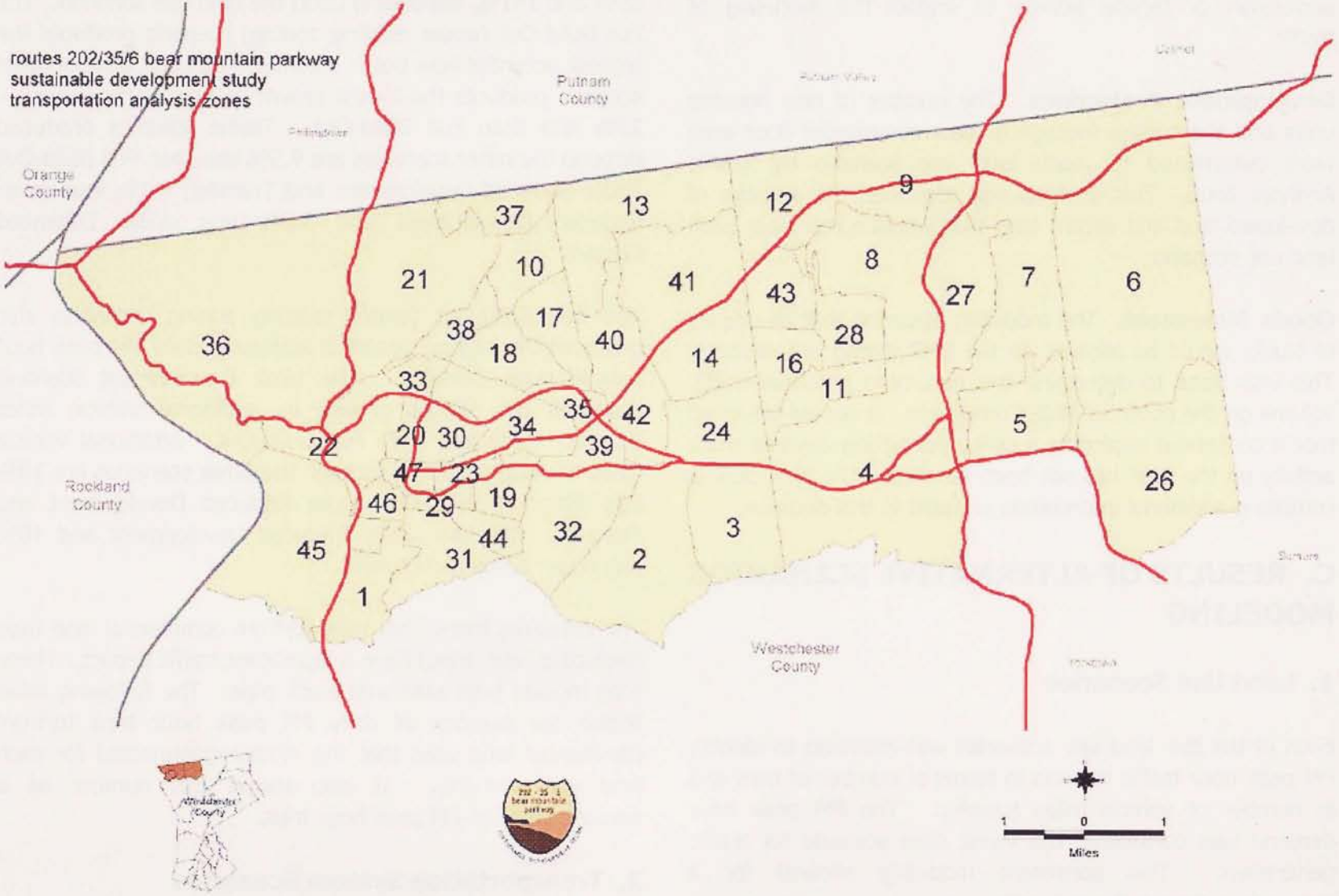
Access Management. This study identified or confirmed the benefits of improved access management along sections of Route 6 and Route 202/35. Access management techniques include limiting curb cuts, revising driveway alignments and providing for shared and interconnected parking lots. The model assumed that many of these access revisions would be in place when forecasting future conditions. This assumption, alone, resulted in slight improvements to the operations at intersections along Routes 6 and 202/35.

Transit Ridership. The impact of transit use was incorporated into the modeling. Current transit ridership was estimated for the study area and then auto trip tables were reduced accordingly.

No Transit Improvements. The potential for land uses in the study area to support additional transit service was assessed. In general, seven residential units per acre within a walking distance of 1,500 feet are needed to make bus transit viable. None of the land use scenarios meet this density threshold. Therefore, for purposes of modeling, no new transit improvements, such as additional service or new routes, were incorporated into the model. This assumption does not mean that some types of new or revised transit service should not be identified as part of the final Plan.

Bicycle/Pedestrian Considerations. It was determined

Figure 27. Transportation Analysis Zones



that none of the land use scenarios created sufficient pedestrian or bicycle activity to impact the modeling of traffic.

Development Projections. The number of new housing units and the square footage of new commercial floor area were determined for each land use scenario by Traffic Analysis Zone. This analysis also identified the acreage of developed land and vacant land that would result from each land use scenario.

Goods Movement. The modeling assumed that all classes of trucks would be allowed on the BMP during the daytime. This was done to determine the maximum potential traffic volume on the potential BMP Connection. It should be noted that a consensus regarding a policy permitting daytime truck activity on the BMP has not been reached. The NYS DOT is compiling additional information to assist in this decision.

C. RESULTS OF ALTERNATIVE SCENARIOS MODELING

1. Land Use Scenarios

Each of the five land use scenarios was modeled to identify PM peak hour traffic impacts in terms of number of trips and in number of vehicle miles traveled. The PM peak hour demand was considered the worst case scenario for traffic generation. This consistent modeling allowed for a comparison among the scenarios.

By 2025, PM peak hour traffic was forecast to grow between 85% and 141%, depending upon the land use scenario. The Full Build-Out (under existing zoning) scenario produces the highest potential new traffic volume. The Limit Development scenario produces the lowest growth in new traffic volume—23% less than Full Build-Out. Traffic volumes produced through the other scenarios are 9.5% less than Full Build-Out under Reduced Development and Transfer, 8.1% less under Reduced Development and 3.8% less under Enhanced Centers.

The Full Build-Out (under existing zoning) scenario also produces the highest potential additional daily PM peak hour vehicle miles traveled. The Limit Development scenario produces the lowest growth in additional vehicle miles traveled—43% less than Full Build-Out. Additional vehicle miles traveled produced through the other scenarios are 18% less than Full Build-Out under Reduced Development and Transfer, 14% less under Reduced Development and 10% less under Enhanced Centers.

The modeling found that trips to/from commercial land uses (including retail trips) have a significant traffic impact. These trips include both auto and truck trips. The following table shows the number of daily PM peak hour trips to/from commercial land uses that the modeling projected for each land use scenario. It also shows this number as a percentage of all PM peak hour trips.

2. Transportation System Scenarios

Each of the five transportation improvement scenarios was tested individually with each land use scenario to determine individual benefits and constraints. The results include the following:

All trips to/from commercial land uses		
Scenario	**Number of PM Peak Trips to/from Commercial Land Uses**	**Percent of Total PM Peak Trips**
Full Build-Out	9,189	45%
Enhanced Centers	9,266	51%
Reduced Development	8,407	49%
Reduced Development and Transfer	8,169	49%
Limit Development	5,504	53%

a. Bear Mountain Parkway Connection. The traffic volumes between the existing Bear Mountain Parkway and the Taconic State Parkway indicate the need for this new facility. In addition, there would be sufficient capacity on the new facility to accommodate traffic that could be diverted from Route 6 to use the new connection to the Taconic State Parkway. If located in the reserved BMP right-of-way, the facility could encroach on wetlands, a trout stream, an aquifer and floodplain and possibly impair the aesthetic character of the north side of Route 202/35. There is potential for the new road to be shifted to the north to lessen environmental impacts. The facility would create additional capacity on Route 202/35 to serve adjacent commercial land uses but would reduce the flow of traffic passing in front of those uses.

b. Route 202/35 Widening. In order to accommodate the forecast traffic volumes, Route 202/35 would need to be widened to 6-lane facility. This would require encroaching on the Bear Mountain Parkway (BMP) right of way. The widened roadway could be rebuilt as a boulevard to improve community character and to incorporate improved bicycle, pedestrian and transit facilities. This type of road would maintain the flow of traffic in front of commercial land located uses along Route 202/35 but would require the construction of new intersections to accommodate the turning movements into the businesses. Construction under this scenario would be likely to have some impacts on a trout stream, wetlands, an aquifer and floodplain.

c. Route 6 Widening. The widening of Route 6 in Mohegan Lake hamlet would impact or eliminate some existing land uses on the north side of Route 6 in the hamlet. The widening would also require substantial widening of the Route 6/Lexington Avenue intersection to accommodate turning lanes; this could have a positive impact on Route 6 eastbound traffic as it approaches Lexington Avenue. The widening would potentially adversely impact pedestrian activity in Mohegan Lake. Wetland and stream impacts at the outlet to Mohegan Lake would be a potential constraint.

d. Route 6 Bypass (One-Way Pair). The new roadway eliminates the need to expand the Route 6/Lexington Avenue intersection and allows preservation of the commercial establishments on the north side of Route 6 in the Mohegan Lake hamlet. As existing Route 6 would not be widened, pedestrian activity would be unchanged and could be enhanced.

e. Lexington Avenue North Extension. Various road connections to Putnam Valley roads are under consideration. Such a new road(s) would provide direct access to and from Putnam County to Route 6. This connection could improve traffic operations on some local roads in Northeast Cortlandt although it could also bring more traffic onto other local roads, particularly those providing connections to Route 6 east of Mohegan Lake hamlet such as Strawberry Road. Better access may also be a growth inducement for parts of Putnam Valley north of the study area. Steep slope, wetland and stream corridor impacts may be a concern along the potential alignment.

D. IMPACT OF TRAVEL DEMAND MANAGEMENT

An analysis of Travel Demand Management (TDM) was conducted to determine the number of trips that would need to be removed from the study area at full build out under existing conditions in order to establish an operating Level Of Service (LOS) D if none of the transportation system scenarios were implemented. (An intersection is considered to be operating acceptably at LOS A through D.)

A common TDM technique to reduce future congestion is to reduce the future amount of potential development. To reach a level of service D under the Full Build-Out Scenario, trips would need to be reduced by an average of 38% across the study area. Necessary reductions would range from 0 to 67%, depending upon the Traffic Analysis Zone. The most substantial reductions would be required in northeast Cortlandt and central Yorktown.

When the Steering Committer considered this data in combination with the findings of the Origin and Destination Survey (which found through traffic to be of far less concern and impact than traffic generated within the study area), the group concluded that reductions in development potential would be desirable to reduce future traffic growth and congestion. However, it was also clear that a recommendation for a total prohibition on future development would be unreasonable and potentially legally unsustainable. The municipalities agreed to address this subject through updates to their local comprehensive plans.

The findings of the study also indicated a major investment in new transportation infrastructure is also needed to improve mobility and quality of life in the study area, even with the recommended move toward reducing development potential.

E. PREFERRED LAND USE PLAN

All of the information developed through the study on land

use scenarios, transportation system scenarios, land use and transportation modeling and impacts of travel demand management was presented to the Stakeholders Committee and to the public at a series of meetings and workshops. The information was used by participants to develop a preferred land use plan for each municipality. As discussed in **Chapter V**, these recommendations were then taken by the municipalities and further developed as part of the update process of municipal comprehensive plans.

City of Peekskill. Enhanced Center with Optional Transfer of Development Rights. A modified Enhanced Centers scenario was selected as the preferred land use. It was determined that a voluntary transfer of development rights rather than a rezoning or mandatory transfer was the most appropriate tool for achieving the Enhanced Center in Peekskill. The Crossroads Plaza in the downtown was identified as the preferred location for redevelopment.

Town of Cortlandt. Reduced Development and Transfer. Potential development on vacant lands outside the target area would be reduced by 50% and then shifted to the proposed hamlet area along Route 6. The vacant parcels outside the hamlet area would be preserved for open space.

Town of Yorktown. Combined Reduced Development and Transfer and Limit Development. The potential development of parcels larger than five acres located south of East Main Street in the target area would be reduced by 75%. The Bear Mountain Parkway Triangle area would be developed in a hamlet style with mixed uses. Development would be discouraged on properties abutting the north side of the BMP right of way between Lexington Avenue and Stoney Street.

F. TRANSPORTATION IMPROVEMENT BUNDLES

The Stakeholders Committee and study participants used the modeling results to propose two different packages of major transportation improvements that could be used to model the preferred land use plan. Each package included a combination of the transportation system improvements that had been previously identified.

Based on the initial results of testing these two Stakeholder and participant devised packages, the study's consultant recommended that three revised transportation improvement bundles be defined and tested. The purpose of this revision would be to make the best use of the complicated modeling capability to determine if a more efficient combination of improvements could be developed to address traffic congestion.

The five major components of the transportation system improvements that were considered are shown in **Figure 28**. The results of the analysis are presented below.

1. Bundle 1

The major new transportation system component in this testing bundle is a four-lane Bear Mountain Parkway

Figure 28. Major Transportation System Improvements

Connection between the existing end points on Route 202/35 of the Bear Mountain Parkway and the Bear Mountain Parkway Extension.
The bundle would result in six travel lanes in the Route 202/35 corridor with two for Route 202/35 plus four lanes on the BMP. The four lanes on the BMP are needed due to the lack of other major highway improvements in study area.

Construction of this facility would require the acquisition of additional right of way to minimize potential environmental impacts.

The modeling identified the following benefits that could be achieved with implementation of this bundle:

- 27 million annual vehicle miles traveled savings
- 980,000 annual vehicle hours of travel savings
- 80% reduction in peak hour PM travel on Route 202/35
- 35% Reduction in peak hour PM travel on Route 6

2. Bundle 2

This bundle consisted of a more complicated set of major

new transportation system components plus significant revisions of a few existing conditions:

- A two-lane, limited access Bear Mountain Parkway Connection
- Route 6 Bypass (One-Way Pair) at Mohegan Lake hamlet
- Westbrook Drive Extension (from Route 6 intersection south to Bear Mountain Parkway with limited access to properties along new extension)
- A three lane Route 202/35 parallel to the new Bear Mountain Parkway Connection (two travel lanes and one center left-turn lane)

This bundle assumed that there would be a connection between Route 202/35 and the BMP at the current BMP end point on Route 202/35 in Cortlandt. It was determined that this access is required to avoid negative traffic impacts in the City of Peekskill. This bundle also assumed that access to the BMP Extension at Stoney Street in Yorktown would be eliminated.

Overall, the BMP Connection and Route 202/35 widening would comprise five lanes (four travel lanes and one center

left-turn lane) in the Route 202/35 corridor. Consequently, this bundle could require less right of way than would be required to implement Bundle 1. Construction of the Westbrook Drive Extension to the south and of the Route 6 Bypass (One-Way Pair) could present significant environmental impacts that would require thorough analysis. If this option is not feasible, another option would be to enhance the interchange of the Bear Mountain Parkway and Route 6.

The modeling identified the following benefits that could be achieved with implementation of this bundle:

- 31 million annual vehicle miles traveled savings
- 1 million annual vehicle hours of travel savings
- 50% reduction in peak hour PM travel on Route 202/35
- 50% reduction in peak hour PM travel on Route 6
- Dramatic improvement in operations at five Route 202/35 intersections due to new center left-turn lane

3. Bundle 3

This bundle also consisted of a complicated set of major new transportation system components plus significant revisions of a few existing conditions:

- A two-lane, limited access Bear Mountain Parkway Connection (Same as Bundle 2)
- A three lane Route 202/35 parallel to the new Bear Mountain Parkway Connection (two travel lanes and one center left-turn lane) (Same as Bundle 2)
- Enhanced interchange at Route 6 and Bear Mountain Parkway

This bundle made the same assumptions as Bundle 2 that there would be a connection between Route 202/35 and the BMP at the current BMP end point on Route 202/35 in Cortlandt and that access to the BMP Extension at Stoney Street in Yorktown would be eliminated.

This bundle was derived to provide an alternative to the construction of the Westbrook Drive Extension as projected in Bundle 2. There is some expectation that environmental constraints on the land necessary to construct such an extension could be so severe as to make it impossible. The study consultant suggested that an enhanced interchange at Route 6 and the Bear Mountain Parkway could provide a more attractive route for traffic between northeast Cortlandt/ Putnam Valley and the Taconic State Parkway south than a route through Mohegan Lake.

The modeling identified the following benefits that could be achieved with implementation of this bundle:

- 28 million annual vehicle miles traveled savings
- 1 Million annual vehicle hours of travel savings
- 80% reduction in peak hour PM travel on Route 202/35
- 35% reduction in peak hour PM travel on Route 6
- Dramatic improvement in operations at five Route 202/35 intersections due to new center left-turn lane

This bundle achieves these benefits because of the enhanced

connection between Route 6 and the BMP in the center of the study area. This enhanced interchange would provide the capacity needed in close proximity to all the major routes. In this manner, it would serve as a distributor of local trips within the study area. Furthermore, it will improve traffic congestion and safety at and in the vicinity of the existing intersections.

The scenario would result in a major shift of traffic from the Route 6 corridor onto the new BMP Connection. For example, motorists who currently use Oregon Road/Red Mill Road/Strawberry Road/Route 6 to access the Taconic State Parkway would (under this bundle) use Westbrook Drive and Route 6 west to the enhanced interchange at Route 6, enter the BMP and use the BMP Connection to reach the Taconic State Parkway. Westbrook Drive has sufficient capacity, based on its original design and recent improvements, to handle the projected traffic volumes.

The projected reduction in traffic volume on Route 6 through Yorktown is high enough that other major transportation system improvements, such as the Route 6 Bypass (One-Way Pair), may not be required to alleviate traffic congestion. However, access management enhancements would continue to be necessary along Route 6.

It is important to note that the Route 6 Bypass may offer numerous other benefits beyond traffic congestion relief and such benefits may warrant its implementation. As noted previously, a one-way pair of roads through the Mohegan Lake hamlet could improve pedestrian and bicycle opportunities and conditions as well as the functionality of the hamlet business area and provide for alternative routings for local traffic.

4. Special Improvement Bundles

Three special improvement bundles were also defined as part of the analysis. These three are: the intersection improvement package, the transit improvements package and the bicycle and trailways connections package. Selected components of each are shown in **Figure 29**, **Figure 30** and **Figure 31** respectively.

Elements of these three bundles can, and should, be implemented regardless of which major transportation system projects are selected for implementation.

Figure 29: Intersection and Access Improvements

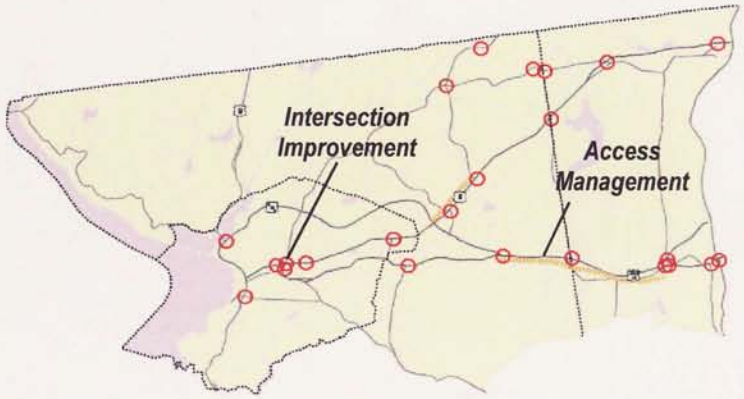


Figure 30: Transit Improvements

Figure 31: Bicycle and Pedestrian Connections

V. IMPLEMENTATION

This Sustainable Development Plan recommends that actions be taken in five interrelated but distinct categories — major road construction, intersection reconstruction, transportation services, land use management and regional coordination. As the study process demonstrated, the solutions for resolving traffic congestion issues cannot be sought only in making highway changes. Land use, access to land use and broader aspects of mobility can both hinder and improve traffic flow. Further, traffic does not stop at municipal borders nor is it confined to roads under any one government's jurisdiction.

The Sustainable Development Study partners understand the need for a comprehensive approach to transportation and land use in the three community area. The City of Peekskill, the Town of Cortlandt, the Town of Yorktown, Westchester County, the New York State Department of Transportation, the New York Metropolitan Transportation Council and the Federal Highway Administration will share responsibility for implementation of the Plan's recommendations. They will continue to meet and work cooperatively.

As stated in **Chapter I**, because this Plan was the result of a partnership of governments at four levels, the opportunities for the study area to qualify for state and federal funding and financing of the Plan's recommendations are greatly enhanced.

The key recommendations of the Sustainable Development Plan are highlighted in **Figure 32.**

Some recommendations can be enacted by one partner only, such as an amendment of a zoning ordinance by a town board or city council. Other projects may require the consent and cooperation of private property owners. In all cases, the study partners can provide vital support through technical assistance or the securing of funding. The Sustainable Development Plan was accomplished through coordinated teamwork. Effective and timely implementation requires the same approach.

A. MAJOR ROAD CONSTRUCTION

The Sustainable Development Plan recommends that six major transportation system improvements be pursued for implementation:

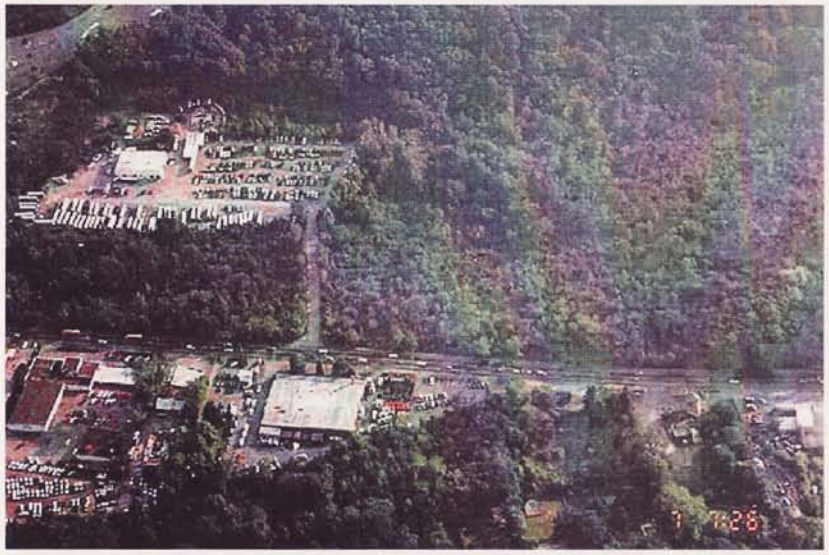
1. Route 202/35 Center Left-Turn Lane

The Plan recommends the construction of either a center turn lane or a wider median that could contain left turn bays on Route 202/35 extending between the Bear Mountain Parkway terminus in Cortlandt and the Taconic State Parkway in Yorktown. The center turn lane would allow unrestricted access to all driveways (presumably reduced in

number through an access management program). Elimination of turning traffic from through lanes would improve movement of through-traffic.

The median/turning bay option offers an opportunity to improve community character while providing safety and efficiency for left turns at heavy demand locations.

Under either scenario, bike lane striping or shoulder treatments for biking should be provided. This improvement has already been placed on the regional multi-year Transportation Improvement Program, a necessary step for the use of federal funds.



A new center lane on Route 202/35 would alleviate congestion from traffic making left turns in to businesses.

2. Bear Mountain Parkway Connection

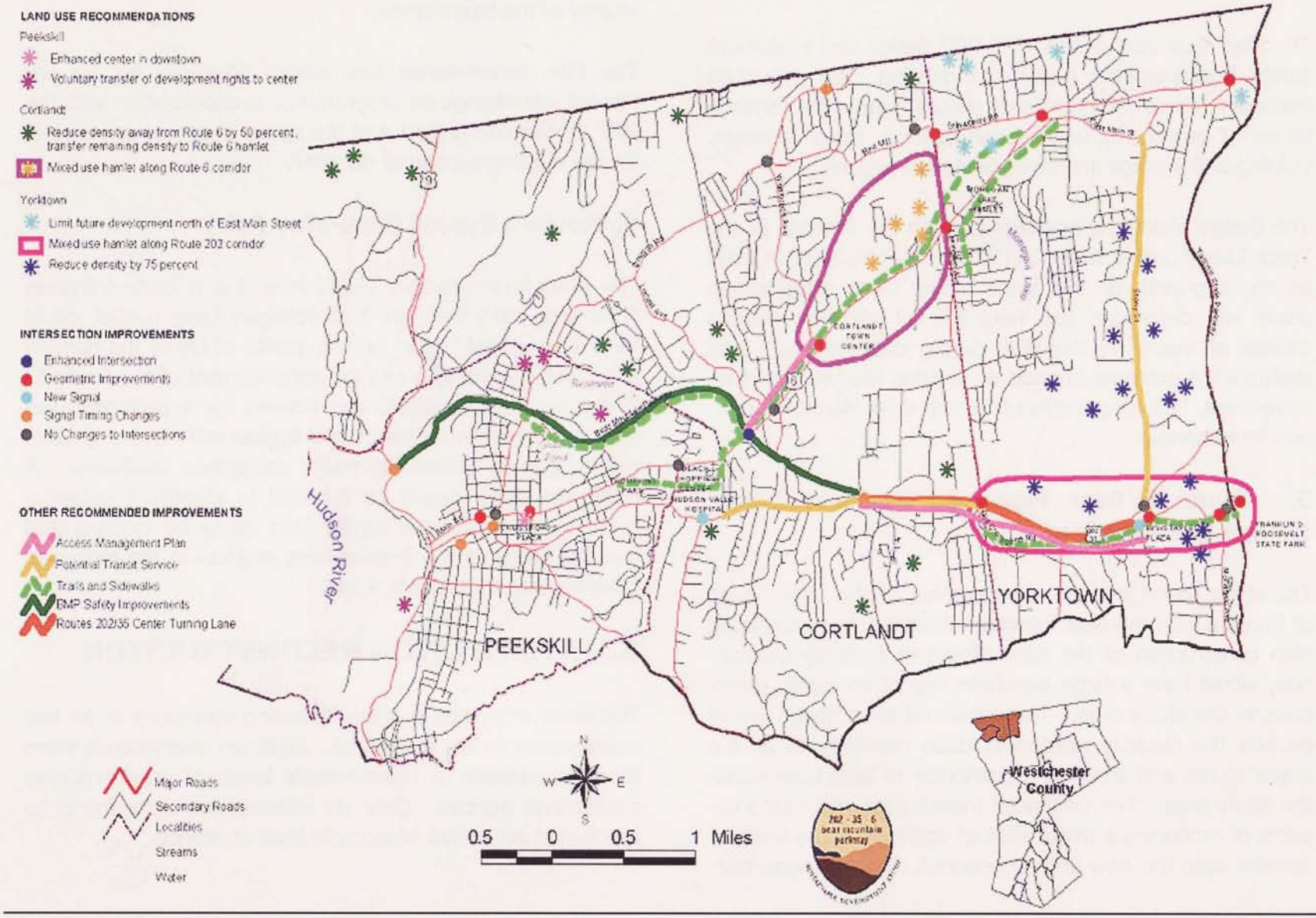
The Plan recommends the design and construction of a limited access two-lane Bear Mountain Parkway Connection to be located parallel to Route 202/35. Access to this 1.7 mile roadway from other roads would likely be limited to two points – near the current terminus of the Parkway at Route 202/35 in Cortlandt and at current terminus at Route 202/35 of the Parkway Extension link to the Taconic State Parkway in Yorktown. The required environmental review for this project will identify the need to consider alternative alignments to avoid and minimize adverse environmental impacts.

3. Lexington Avenue Extension

The Plan recommends that a study be undertaken of evaluate the feasibility of constructing a road in the vicinity of Strawberry Road and Foot Hill Road north to the vicinity of Peekskill Hollow Road in Putnam County. This improvement has the potential to reduce traffic on local roads in Northeast Cortlandt although a new direct route to Route 6 may also be a growth inducement and result in adding traffic on Strawberry Road. The study needs to asses all potential consequences so that actual benefits and costs of an extension are understood.

The design of the new segment of roadway should provide only limited access to adjacent properties so as to preserve the purpose of the connection to serve through traffic.

Figure 32. Key Plan Recommendations



4. Bear Mountain Parkway Safety Improvements

The Plan recommends that NYS DOT design and implement safety improvements along the existing Bear Mountain Parkway. These improvements should include the rehabilitation of pavement, lane reconfiguration, ramp redesign, striping and signage and other advisable actions.

The design should be coordinated with the findings of the Truck Classification Study undertaken by NYS DOT in 2003 as an outgrowth of this study. The truck classification study will determine the feasibility of allowing various classes of trucks on the BMP during daytime hours and evaluate the potential impacts on existing roadways and intersections, including the Route 6 and Bear Mountain Parkway interchange.

5. Route 6/Bear Mountain Parkway Interchange Enhancement

The study found that an enhancement of the interchange of Route 6 with the Bear Mountain Parkway, in combination with construction of the Bear Mountain Parkway Connection, would have a large beneficial impact on traffic conditions in the study area. The enhanced interchange would provide the capacity needed in close proximity to all the major routes and serve as a distributor of local trips within the study area. The enhanced interchange was found capable of producing a major shift of traffic from the Route 6 corridor onto the new BMP Connection. Furthermore, traffic congestion and unsafe traffic conditions will be mitigated resulting in less delays on adjacent roads in the immediate vicinity of the interchange.

The Plan recommends that design feasibility for an enhanced interchange be programmed in coordination with the BMP Connection project and the safety improvement project for the existing section of the BMP.

6. Route 6 Bypass (One-Way Pair)

The study found that the establishment of a Route 6 Bypass (One-Way Pair) through the Mohegan Lake hamlet could have a beneficial impact on the quality of life of the hamlet. If the BMP Connection and the enhancement of the Route 6/ BMP interchange projects are delayed for a prolonged period, the implementation of the bypass will have a greater role to play in addressing traffic congestion conditions. A feasibility study should be initiated to identify a potential route for a westbound facility that could be incorporated into the planning for development projects in the Mohegan Lake/Northeast Cortlandt areas.

B. INTERSECTION RECONSTRUCTION

The study examined existing operating conditions at 24 key intersections in the study area. Eighteen intersections were found to operate at unacceptable levels of service during peak travel periods. Only six intersections were found to function at an overall acceptable level of service.

Each intersection was studied to determine what type of improvements would be needed to improve all levels of service at all lane groups for all time periods to Level of Service (LOS) D or better for current conditions.

It was found that geometric improvements, possibly with signal timing adjustments, would be required at 12 intersections. As part of the study, preliminary geometric improvement plans were prepared for these 12 intersections.

It is important to note that the feasibility of making these changes has not yet been determined. Environmental or other site constraints may limit the options for improvement. In addition, some of the recommended geometric improvements, such as additional through lanes and additional left turn lanes, may be classified as "smaller scale" physical projects. Signal timing changes are recommended for some of the intersections. In all situations, detailed design studies are required to determine the actual geometric changes to each intersection.

With the exception of Intersections 2, 5 and 16, the intersections are the responsibility of the NYS DOT. Intersections 2 and 5 are under the City of Peekskill's jurisdiction and Intersection 16 is under the joint jurisdiction of the Towns of Cortlandt and Yorktown.

Intersection 1 - Annsville Rd/Bear Mountain Parkway

Geometric changes are needed for the eastbound and southbound approaches. The eastbound approach would gain another left turn lane and the southbound approach would gain another through lane. In addition, the signal timing should be adjusted.

Intersection 2 - Route 6/Nelson Avenue

Geometric changes are needed for the westbound and northbound approaches. The one left-through-right lane at each approach would become one left and one through-right turn lane. No signal timing adjustments are recommended.

Intersection 5 – Route 6/Broad Street

Changes are needed to the left-through-right lanes at the westbound, northbound and southbound approaches to accommodate one left and one through-right lane. Signal timing should be adjusted. In addition a left turn phase for northbound/southbound traffic should be incorporated into the timing plan.

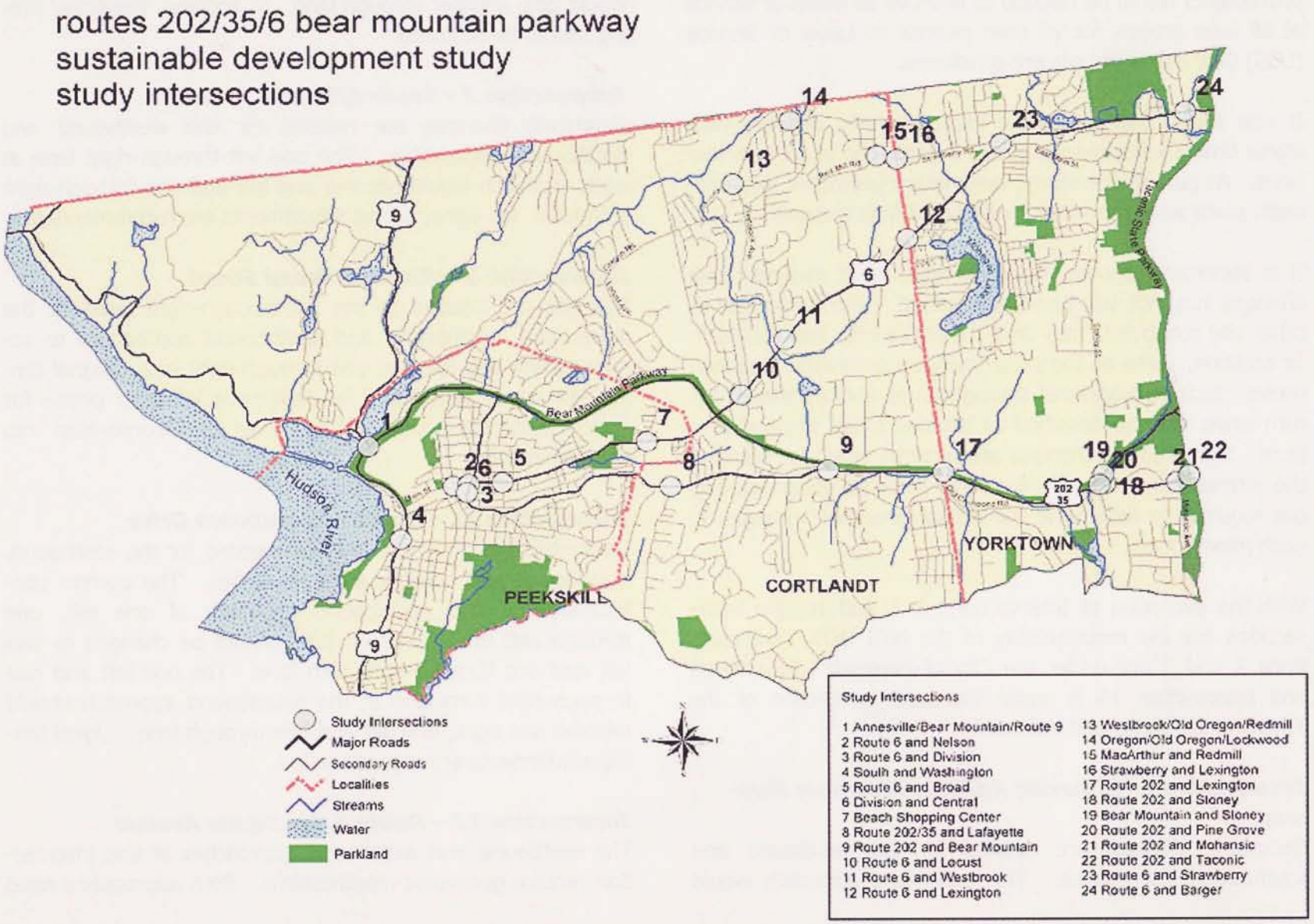
Intersection 11 – Route 6/Westbrook Drive

Geometric and other changes are needed for the eastbound, northbound and southbound approaches. The current configuration at the northbound approach of one left, one through and one right turn lane should be changed to two left and one through-right turn lane. The one left and one through-right turn lane at the southbound approach should become one right, one left and one through lane. Signal timing adjustments are recommended.

Intersection 12 – Route 6/Lexington Avenue

The eastbound and westbound approaches at this intersection require geometric modifications. Both approaches need

Figure 33. Study Intersections



a dedicated right turn lane.

Intersection 16 – Lexington Ave/Strawberry Road
The westbound approach of this 'T' intersection that currently operates with one lane needs to be changed to two lanes (one left and one right turn lane). Cortlandt and Yorktown officials will meet to discuss separating traffic with traffic barrels as a test.

Intersection 17 – Route 202-35/Lexington Avenue
Geometric changes are needed at the westbound, eastbound and southbound approaches. The east and southbound approaches currently have one lane and need a second lane to allow through and right-turning traffic to bypass the left-turners. The westbound approach needs another lane to accommodate left turns in the gas station. Signal timing changes are recommended.

The Plan recommends that this intersection be realigned on the south side to include left turning lanes from Route 202/35 to Lexington Avenue and the Hess Station. The entrance of the Hess Station at the intersection of Lexington Avenue should be converted to a two-way ingress/egress and all vehicles traveling west from the station should be required to exit through the signalized intersection. The access point to the east causes major traffic conflicts and safety issues and should be converted to a right turn only. As a result of the Sustainable Development Study, NYS DOT has set aside funding for this improvement and is currently completing design plans.

Intersection 18 – Route 202-35 /Stoney Street
The eastbound approach of this intersection requires the addition of an exclusive right-turn lane. Signal timing changes are recommended

Intersection 21 – Route 202-35 /Mohansic Avenue
Geometric changes are needed. Both the eastbound and westbound approaches will require a second through lane. Signal timing changes are recommended.

Intersection 22B – Route 202-35/Taconic State Parkway NB
Geometric changes for the eastbound and westbound approaches are needed. The eastbound approach will need a second left-turn lane and the westbound approach will require another through lane in addition to the existing one through-right turn lane. The northbound approach currently operates with a left-turn lane and a right-turn lane. Operations for this approach can be improved simply by removing the exclusiveness of the left turn lane and allowing through traffic to utilize that lane when left-turners are not present. Signal timing changes are recommended.

Intersection 23 – Route 6/Strawberry Road
The northbound approach will need a lane utilization modification to disallow left turns from the center through lane thereby providing an exclusive lane for through traffic. Signal timing will also need to be adjusted.

Intersection 24 – Route 6/Barger Road
The westbound approach needs a second left-turn lane and

the northbound approach needs the addition of an exclusive left turn lane. Signal timing and phasing changes are recommended.

C. TRANSPORTATION SERVICES

1. Traffic Operations

As discussed above, the study examined existing operating conditions at 24 key intersections. The study found that acceptable conditions can be achieved at six intersections with:

- Signal timing adjustments at 4 intersections
- Installation of traffic signals at 2 intersections

In addition to addressing existing problems, the recommended improvements will create reserve capacity for future development, at the reduced levels recommended as part of this Plan's land use recommendations. However, it is important to note that the traffic operation improvements will not provide enough time-savings for drivers to change their routes. Therefore, areas such as the Oregon/Red Mill/ Strawberry Roads corridor will continue to experience high peak hour traffic volume levels.

a. Signal Timing Changes. Four intersections could be improved in the near term by simple changes in the signal timing. A proposed signal timing plan has been prepared and submitted to the state or local agency responsible for the signal. These agencies are identified in parenthesis. The intersections are:

- Intersection 4 – South St/Washington St (City of Peekskill)
- Intersection 9 – Route 202-35/Bear Mountain Parkway (NYS DOT)
- Intersection 10 – Route 6/Locust Ave (NYS DOT)
- Intersection 14 – Oregon Rd/Lockwood Rd/Old Oregon Rd (Town of Cortlandt)

While Intersection 14 does not require geometric improvements to increase the Level of Service, it is recommended that a geometric improvement plan be developed to enhance motorist and pedestrian safety.

Further investigation of the traffic signals in downtown Peekskill found that adjusting and synchronizing the signals from Decatur Avenue to Broad Street would have a significant impact on reducing traffic congestion. This multiple-intersection approach should be defined as a single project and be pursued for funding and implementation.

b. New Signals. New traffic signals are proposed for two intersections:

- Intersection 8 - Route 202-35/Lafayette Ave
- Intersection 20 - Route 202-35/Pine Grove Court

2. Access and Driveway Retrofits

The location, configuration and design of driveways and de-

velopment roads in a number of areas, together with the proliferation of signs, creates confusion for drivers in accessing businesses and unsafe and inefficient driving conditions in heavily developed areas. Access improvements in developed areas should be pursued as one means of improving traffic safety and flow.

In general, changes to existing access cannot be required except where: (i) there is an explicit safety/accident problem related to a specific driveway or (ii) or where there is a change of use or an increase of use at a specific property and a conditional permit is required from a state or local government. In the first case, the driveway can be reconfigured at the cost of the entity having jurisdiction over the road. In the second case, the driveway can be reconfigured at the cost of the business. Local governments should evaluate opportunities to improve access as changes of use or redevelopment occurs.

There are two conditions where substantial improvements to access at multiple properties are possible and should be pursued in the future. First, changes should be incorporated when major road projects are anticipated. Second, changes should be implemented when major developments are proposed that directly affect abutting properties. Both occasions present opportunities to negotiate desirable access changes with properties affected by the project, as well as to reduce the cost of access retrofits by linking them to other sources of financing and scale efficiencies.

3. Transit

The Plan does not recommend the immediate establishment of new bus routes nor an increase in transit service on existing routes. Stakeholders had suggested that new bus service be considered between the Route 202/35 and Route 6 corridors via Stoney Street in Yorktown. Currently, such service would not be financially viable.

An objective of the Sustainable Development Plan is to make the study area more suitable for transit services in the future.

The new hamlets envisioned in the Plan's land use recommendations will provide excellent opportunities for creating land use patterns and roadway designs that encourage transit use. For example, each of the hamlets should incorporate a park-and-ride facility that could be linked with jitney or bus service to/from the Metro-North Railroad stations in Peekskill and Cortlandt.

As of March 2004, Cortlandt is discussing the establishment of a jitney service with the developer of a proposed senior housing development on Route 6 near the Bear Mountain Parkway. This type of specialized service may have immediate potential in the study area.

To best accommodate transit service in the future, site developments and road projects along Route 6 and Route 202/35 should incorporate provisions that improve bus stop transit facilities. Transit design considerations should also include: minimum lane widths and corner radii, bus stop spacing and placement at intersections and turnout bays and bus shelters. Where feasible, transit accommodations should be provided within shopping centers and office parks. The Westchester County Department of Transportation publication, *Bus Ser-*

vice Guidelines for Westchester County Municipalities, should be used as a reference guide when considering design requirements.

4. Pedestrian and Bicycle Considerations

By providing a continuous, safe network of sidewalks and bike lanes linking origins and destinations, walking and biking can become a preferred transportation choice on short trips. Both Peekskill and Cortlandt require sidewalks on an "as needed" basis through the development application review process. Yorktown requires sidewalks as part of new developments unless waived by the town agency approving the application. The towns and city should target the construction or improvement of sidewalks wherever possible, especially within hamlets and within reasonable walking distance of the hamlets.

Stakeholders and public workshop participants highlighted a number of bicycle and pedestrian facility improvements that they would like to see implemented. Other types of improvements, such as the installation of bicycle racks, were suggested. All planning for transportation projects, as well as the review of development applications, should consider and incorporate the recommendations of the *Mid-Hudson South Region Bicycle and Pedestrian Master Plan* (2001).

5. Truck Routing

As a result of this study, NYS DOT initiated a Truck Classification Study in the study area to examine the feasibility of allowing trucks on the Bear Mountain Parkway. The study results will be used to determine which, if any, classes of trucks will be allowed to operate on the Parkway during daytime hours. (Trucks of all classes are currently allowed to operate on the Parkway during evening hours.) The recommendations of the truck classification study will be considered by the Steering/Implementation Committee and be incorporated as appropriate in this Plan.

D. LAND USE MANAGEMENT

Participants in the study from the three communities concurred that land use policies and implementing regulations are important tools to manage transportation demand. If the study area was to continue to develop to build-out under current regulations, traffic congestion would worsen. The type of development that would continue to occur would emphasize auto-oriented and segregated land uses. Commercial development along highways could exacerbate traffic congestion without effective access management.

The land use pattern recommended by this Plan emphasizes mixed use development in downtown Peekskill and reshaping into hamlet centers existing and new development along Route 6 in Cortlandt and in the Bear Mountain Parkway Triangle along Route 202/35 in Yorktown.

Since hamlets typically integrate different land uses, they have a variety of advantages. These include the capturing of trips that would otherwise end up on external roads as well as providing options for walking, biking and possibly even

transit services. Hamlets may also create a sense of community and neighborhood.

Some areas distant from the proposed and existing hamlets should be considered for a lowering of maximum permitted development density.

Several tools can be utilized to achieve the land use management recommendations of the Plan.

1. Comprehensive Plans

As the sustainable development study proceeded, the towns of Cortlandt and Yorktown began work on updating the local comprehensive plans. As town-wide plans, each plan incorporates land areas larger than the sustainable development plan. However, the process followed in each town has been sensitive to the SDS work effort and has included consideration of the SDS products at each step in the update process. Each town released a draft plan in winter 2003-2004.

The final draft of the Cortlandt Comprehensive Plan (February 2004) seeks to reduce development outside of the target areas identified by this Plan by placing a heavier emphasis on protection of wetland buffers, critical environmental areas and other environmentally sensitive areas. Furthermore, the draft comprehensive plan address the potential for higher density in the Route 6 corridor through Planned Village Development. Even though the "reduce and transfer" option discussed in **Chapter IV** will likely not be implemented, in the opinion of the Town's comprehensive plan consultants, the modeling results for the transportation improvement bundles will not change significantly relative to vehicle hours and miles saved.

As of March 2004, a generic environmental impact statement was being prepared for the draft Yorktown Comprehensive Plan (2003). The draft Plan incorporates the land use and transportation recommendations of this Plan.

The two draft town plans are consistent with the consensus objectives set forth in this Plan as well as with the following more specific objectives outlined by the Stakeholders Committee and participants in public workshops:

Neighborhood Design

- Establish neighborhood centers that are distinct pedestrian and transit oriented communities that would include a mix of uses and civic facilities.
- Reconfigure linear shopping around public squares and plazas.
- Establish architectural guidelines that balance architectural variety with continuity and promote aesthetically pleasing hamlets.

Transportation

- Establish street patterns that promote efficient and continuous circulation and maximize the options to connect east/west routes with north/south routes.
- Establish shared parking and driveway arrangements.
- Establish an interconnected pedestrian and bikeway sys-

tem for transportation and recreation purposes.

Environment

- Protect lands that contain wetlands and steep slopes.
- Concentrate higher density development in areas with minimal environmental constraints.
- Ensure that new development and roads minimize impacts.

In terms of land use, this Plan and the draft local comprehensive plans recommend the following:

Cortlandt. The eastern portion of Route 6 and the area along Lexington Avenue north of Route 6 may be appropriate locations for the Town's Planned Village District, which is consistent with the hamlet concept presented in this Plan.

Yorktown. The new hamlet would evolve as the Bear Mountain Triangle area is developed. Plus, as current uses become obsolete or as sites are redeveloped, a hamlet pattern and style of development will be encouraged and a strip development pattern will be avoided. The potential development of parcels larger than five acres located south of East Main Street in the target area may be considered for a reduction of 75%.

2. Internal Subdivision Roads

As vacant parcels are proposed for subdivision or site plan approval, the municipalities of Peekskill, Cortlandt and Yorktown should seek to provide new connections between existing roads. Road connections will help relieve congestion at major intersections by diffusing traffic. New connections will also provide choices for motorists and allow them to avoid already congested intersections. An area where new connections from an existing subdivision might be possible is bounded by Lexington Avenue, Route 6, Armstrong Road and Red Mill Road in Cortlandt. Opportunities should also be sought to provide road connections between adjacent properties in new and proposed developments.

The creation of new official maps can be used to help achieve this recommendation. The maps can be used by local municipalities to lay out new streets or to indicate widening or closing of existing streets. The three communities should consider preparing and adopting a collaborative official map, taking into account the anticipated location, timing and type of growth as identified in their comprehensive plans.

3. Access Management

The Plan recommends that access management plans be prepared and implemented for three roadway segments: for Route 6 through the Mohegan Lake hamlet, for Route 202/35 between the Bear Mountain Parkway end point in Cortlandt and the Taconic State Parkway in Yorktown and for Route 6 between the Bear Mountain Parkway and Lexington Avenue.

Access management is a comprehensive review of property access (for example, driveways, property interconnections and sidewalks), traffic safety, road capacity and vehicle

speed. Implementation of an access management plan can improve traffic operations, reduce traffic delay, increase safety and improve community character.

A presentation should be prepared to educate municipal boards on the importance of access management as a consideration in the site design of new development.

The plans for the three corridors should incorporate specific design requirements to limit curb cuts, require shared driveway and parking arrangements, provide for secondary or service road access and accommodate pedestrians, bicyclists and transit service. Development of access management guidelines should follow established good design practices. The *Best Practices in Arterial Management* is one useful reference tool published by the NYS DOT.

As a vital hamlet with a wide mix of land uses, new development pressures and a large residential population, Mohegan Lake is an ideal area to be considered for access management. A study should result in findings and recommendations that can used by the local planning board in the review of development applications and by other agencies in the design of road, transit, bicycle and community improvement projects.

Along Route 202/35, the access management plan should be coordinated with the recommendation for creation of a center turn lane or median/left turn bay. The installation of a continuous left turn lane or several left turn bays for westbound vehicles to access the commercial development along the south side of the corridor would provide a means for left turning vehicles to get out of the traffic stream. This will eliminate the long queues that now result behind vehicles making left turns.

Along Route 6 in Cortlandt, the Town has encouraged shared parking or driveway access arrangements under its Planned Village Development provisions. Cortlandt has also required a shared access through a parking lot as part of its approval for a commercial site plan along Route 6. The sharing of driveways between the Wendy's and Mobil gas station on Route 6 adjacent to the entrance to Cortlandt Town Center is one such planning example. Another example is the new Circuit City and Shop Rite shared parking lot configuration. An access management for this corridor could serve to advance Cortlandt's interest in creating an attractive and functional "Cortlandt Boulevard," as previously discussed in this Plan.

This Plan encourages all three communities to continue to give more consideration to access management tools during the site plan review process.

Implementation of access management techniques can be achieved through amendment of subdivision and site plan regulations, application of requirements through subdivision and site plan review and requiring mitigation by developers as part of planned new or redevelopment projects.

4. Zoning Tools

a. Planned Village Development District. The Town of

Cortlandt has Planned Village Development provisions in its zoning code to encourage the development of mixed-use villages and communities. The minimum land area is 25 acres. Creation of a Planned Village Development requires the issuance of a Special Permit by the Town Board after the appropriate reviews by the Planning Board. As of March 2004, the Town was considering reducing the 25-acre minimum requirement and reducing the permitted density of housing units so as to encourage a more cohesive planned development area for the Route 6 corridor.

b. Setback/Height Requirements. The Plan recommends the use of a maximum setback standards, especially in the hamlets. Cortlandt and Yorktown have minimum setback requirements in all zoning districts with no maximum setback. When buildings line up along a street, they create a defined edge to the public space, which is typical in traditional hamlet design. The building alignment with the street edge combines with the sidewalks and the trees to create an attractive look. Reduced or no front or side yard setbacks also encourage pedestrian traffic since it is easier and safer to enter the commercial facility without crossing a parking lot.

The Plan recommends that consideration be given to establishing a minimum building height standard in the hamlets. Each of the communities has maximum height requirements in their commercial zone but none has a minimum height requirement. Buildings that have a minimum height of two stories could best accommodate mixed uses with, for example, stores on the ground level and offices or apartments above.

c. Design Guidelines. The Plan recommends the development and use of design guidelines for new uses along Route 6 and Route 202/35 as well as within the hamlets. Design guidelines provide criteria for a design review process. The emphasis is not on requirements, but on guidance. Design guidelines serve to document standards for architectural design, sign placement, building materials, development patterns, historic preservation, site design and streetscape design. The draft comprehensive plans in both Cortlandt and Yorktown place strong emphasis on design.

E. REGIONAL COORDINATION

1. Implementation Committee

Implementation of the Sustainable Development Plan should be overseen by an Implementation Committee. This committee should have the same membership as the study's Steering Committee. The committee will represent the ongoing partnership of the three municipalities, Westchester County, NYS DOT and NYMTC. The committee will track, evaluate and implement the recommendations of the Plan and encourage regional consideration of significant development proposals.

It is recommended that the Stakeholders Committee continue to meet on a periodic basis.

2. Operations and Simulation Model

As part of the implementation phase of the Sustainable Development Plan, a traffic operations and simulation model is being developed to assist in the refinement of the short-term action projects, the implementation of the recommended intersection reconstruction proposals and the planning for the recommended major road construction concepts. The model will produce animations of traffic flow on the transportation system. It includes more than 100 intersections, all state and county roads, downtown Peekskill and major connecting local roadways in the study area.

The model will provide municipal officials, as well as the public, with a visual tool to observe the operations of the transportation network. The model will also allow for the direct visualization of land use decisions and the effect of the those decisions on the transportation system.

Scenarios that are being simulated include:

- Existing conditions
- Short term action project improvements
- Mid-term improvements
- Long-term improvements
- Access management scenarios
- Design alternatives at bottlenecks

In another valuable role, the model will be used by the three municipalities as a tool in the review of traffic impact statements prepared for development proposals. In conjunction with the travel demand model, the simulations will permit testing of the impacts on traffic flow as well as air quality parameters. Use of the model will ensure that potential traffic impacts are being considered at both the local and full study area level, as appropriate. In addition, having one model in use in all three municipalities will permit consistency in reviews of major development proposals.

Example of visual image created be simulation model showing vehicles on roadways.

A protocol for use, management and maintenance of the model will need to be developed and included as part of an intermunicipal agreement.

3. Financing Transportation Improvements

This Plan proposes or anticipates a variety of improvements to existing state and local roads, the construction of new links between existing roads and the construction of new roads. The financial requirements for these improvements will be significant. It is likely that financing for these improvements will have to be drawn from traditional federal, state and local financing resources and from non-traditional sources.

a. State and Federal Sources. The transportation improvements recommended in this Plan may be eligible for federal funding when implemented through the metropolitan transportation planning process as established under federal transportation legislation. As a precondition for receipt of federal transportation funding, this federal legislation requires a coordinated planning process for metropolitan areas. This planning process is the responsibility of the *metropolitan planning organization* (MPO). In the New York City metropolitan region, the MPO is the New York Metropolitan Transportation Council (NYMTC).

NYMTC's planning process is built around three required planning programs: the Regional Transportation Plan (RTP), the Transportation Improvement Program (TIP) and the Unified Planning Work Program (UPWP). The RTP and the TIP are focused on identifying necessary transportation improvements in NYMTC's region and defining projects and services that are to receive federal funding. The UPWP is required to access federal planning funds necessary to continue the planning process and produce both the RTP and the TIP. The UPWP finances other planning activities as well as specific studies undertaken to identify potential transportation improvements. This sustainable development study is an example of a planning study funded by the UPWP.

The recommended transportation improvements must first be included in the RTP and then be programmed as recommended transportation improvements in the TIP. Once the recommended transportation improvements appear in the TIP, they have been allocated federal funds. As a result of the sustainable development study process, several projects have already been added to the TIP. A more detailed project-level environmental assessment begins after a project is on the TIP, followed by project planning and design.

Other transportation improvements recommended in the Sustainable Development Plan can follow this federal funding process or can be implemented using Westchester County or New York State funds. **Appendix D** identifies projects that are listed on the 2004-2006 TIP for the study area.

Because this Plan was the result of a partnership of governments at four levels, the opportunities for the study area to qualify for state and federal funding and financing of the Plan's recommendations are greatly enhanced.

b. Non-Traditional Resources. There are a variety of non-traditional resources that can be used to meet the financing requirements for future road improvements. Three of the most common of these, which have been applied in the State of New York, are discussed below.

DEVELOPER MITIGATION

Major developments have a substantial and direct impact on transportation safety and efficiency and are normally required to mitigate the transportation impacts of their development on "the existing transportation system on opening day", at their cost. The most common forms of mitigation are traffic lights, turn lanes, access roads, and driveway designs; and are normally required at specific locations where a traffic impact study demonstrates safety problems or a decrease in the LOS along the roadway.

This practice should be continued. Additionally the communities involved should consider augmenting the practice to (i) capture transportation impacts at locations away from the site and (ii) capture the full costs of public infrastructure and, possibly, services impacted by the development. (For example, a development constructing a road to multiple properties which is eventually transferred to local jurisdiction effectively transfers the cost of cleaning, snow removal, striping, maintenance, rehabilitation and reconstruction to the community.)

CUMULATIVE DEVELOPMENT MITIGATION

Small, medium and large developments have transportation impacts which are not mitigated because they are not directly and totally attributable to specific individual developments. Over time the cumulative impacts of these many developments are manifest, as shown by the transportation problems that are, in part, the subject of this Plan.

A number of communities in New York have addressed the problem of cumulative development by imposing a system of mitigation fees. The approach in these communities has been relatively similar, as follows: (i) identify and define an area which is the target of cumulative development, often of mixed use development; (ii) evaluate the potential for development and define development limits and rezone to conform to these limitations; (iii) prepare a Generic Environmental Assessment (GEIS) to identify the impacts of this development and specifically the impacts on public infrastructure including transportation; (iv) identify the mitigation improvements that would be required to minimize / reduce these impacts; and, finally, (v) allocate the costs of these improvements to future development(s) based on their proportional contribution to the need for each improvement. Most communities impose the mitigation fee as a one day fee although it can also be levied on an annual basis as part of the property tax bill.

TRANSPORTATION IMPROVEMENT DISTRICT

Traditional transportation financing sources are the dominant source of financing for transportation improvements that stem from past / existing development. A number of communities have, however, financed such improvements through fees imposed within a "special improvement district". There are a variety of these including "sidewalk improvement districts", "business improvement districts" and others, but one of the most common is the "Transportation Improvement District". In New York State, state legislative approval is necessary for the formation of a TID. In addition, the state comptroller must approve projects and fees. A local municipality can initiate an ordinance to establish a TID.

4. Intermunicipal Agreements

This Plan recommends the adoption of an intermunicipal agreement (IMA) by the local municipalities as one means to pursue implementation of the recommendations contained in this Plan. The IMA can also be used to foster cooperative planning across municipal boundaries. For example, the communities could develop an intermunicipal review procedure as part of the design guidelines and access management strategies along Route 6 and Routes 202/35. It may be in the form of a joint advisory committee that would be responsible for the review of proposals in each corridor. The final decision would rest with the governing authority where the project is proposed.

APPENDIX A—STEERING COMMITTEE MEMBERS

City of Peekskill

Hon. John G. Testa	Mayor
Brian Havareanek	Director of Planning and Development
Blanche Alter	Former Director of Planning and Development
Anthony Ruggiero	Assistant Planner

Town of Cortlandt

Hon. Linda Puglisi	Supervisor
Edward Vergano	Director of Technical Services

Town of Yorktown

Hon. Linda Cooper	Supervisor
John Tegeder	Director of Planning

Westchester County Department of Planning

Edward Buroughs	Deputy Commissioner
Diana Saltel	Principal Planner
Thomas Madden	Planner

Westchester County Department of Transportation

Naomi Klein	Principal Planner

Westchester County Department of Public Works

Kevin Roseman	Traffic Engineer

New York Metropolitan Transportation Council (NYMTC)

Gerry Bogacz	Assistant Director

New York State Department of Transportation (NYSDOT)

Richard Peters	Regional Planning & Program Manager, Region 8
Brad Oswald	Associate Transportation Analyst
Steve Munson	Associate Transportation Analyst
Edward Mark	Senior Transportation Analyst, Region 8
Jean Shanahan	Staff Director, MHSTCC
Patrick Gerdin	Planner, MHSTCC

Federal Highway Administration (FWHA)

Richard Backlund	Intermodal Planning Manager FHWA- NY Division

APPENDIX B – PUBLIC MEETINGS

Date	*Type of Meeting*	*Purpose*
January-03	Joint Municipal Boards	Presentation of Draft Plan
November-02	Stakeholders	Presentation of Draft Plan, simulations and toolkit
October-02	Public Workshop	Deciding Transportation Options
August-02	Stakeholders	Preferred Land Use Scenario and Transportation Improvement Bundles
July-02	Joint Municipal Boards	Preferred Land Use Scenario
June-02	Public Workshop	Short Term Actions Update
May-02	Public Workshop	Bundling Land Use Scenarios and Transportation Improvements
April-02	Public Workshop	Choosing a Preferred Scenarios
October-01	Stakeholders	Traffic Modeling, Testing Process, Land Use Scenarios
September-01	Stakeholders	Presentation of Preliminary Testing Results
April-01	Public Workshop	Early Actions Projects/Discussing Scenarios
March-01	NYMTC Update	NYMTC Update Report
February-01	Stakeholders	Alternative Scenarios
December-00	City of Peekskill	Presentation to the Preservation Review Commission
November-00	Public Workshop	Alternative Scenario Workshops (held in each community)
October-00	Stakeholders	Developing Visions, Identifying Concerns
July-00	Stakeholders	Short Term Improvements
April-00	Stakeholders	Discussion of Issues
March-00	City of Peekskill	Initial Community Meeting
March-00	Town of Cortlandt	Initial Community Meeting
March-00	Town of Yorktown	Initial Community Meeting

APPENDIX C – SCHEDULED TIP PROJECTS FOR STUDY AREA

PIN/ALT ID	DESCRIPTION	FUND SOURCES	TOTAL 3-YEAR PROGRAM	3-YEAR PROGRAM - Starting October 01, 2003			
LEAD AGENCY	COUNTY	FUND/OBL DATE	($-millions)	Pre-FY2004	1st Year FFY04	2nd Year FFY05	3rd Year FFY06	Post-FFY 2006
AQC: NON 800400 NYSDOT R&P <Exempt> AQC: A10	WESTCHESTER BEAR MT PKWY; RT 9-RT 35 PAVEMENT PROJECT ROUTE 9 TO ROUTE 35. TOWN OF CORTLANDT, CITY OF PEEKSKILL	11/2003 SDF 11/2003 SDF 06/2004 SDF 06/2004 SDF 12/2006 SDF 12/2006 SDF	0.200 P 0.040 N 0.200 D 0.500 R 0.000 C 0.000 I		0.200P 0.040N 0.200D 0.500R			 13.000C 1.300I
		TOTAL >>>>	0.940	0.000	0.940	0.000	0.000	14.300
812644 WESTCHESTER RECON <Exempt>	TACONIC STATE PARKWAY; RT 35/ 202 TO RT 6, STAGE 1; RT 35/202- BEAR MT PKWY.	09/2002 SDF 03/2003 SDF	0.000 I 0.000 I	1.178I 0.160I				
		TOTAL >>>>	0.000	1.338	0.000	0.000	0.000	0.000
812696 NYSDOT RECON Non-Exempt>	TACONIC STATE PARKWAY: ROUTE 6-ROUTE 202 RECONSTRUCT AND WIDEN THE PARKWAY FROM FOUR TO SIX LANES. TOWN OF YORKTOWN.	03/2003 LOC 03/2003 NHS 03/2003 SDF 03/2003 NYS 03/2003 SDF 03/2003 NYS 03/2003 NHS 04/2003 NHS 04/2003 NHS 04/2003 SDF 04/2003 SDF	0.000 C 0.000 C 0.000 C 0.000 C 0.000 I 0.000 M 0.000 I 0.000 C 0.000 I 0.000 I 0.000 C	0.055C 36.617C 9.154C 0.270C 0.915I 0.130M 3.662I 3.308C 0.332I 0.083I 0.827C				
		TOTAL >>>>	0.000	55.353	0.000	0.000	0.000	0.000
839089 NYSDOT RECON <Exempt>	RT 6 CULVERT & WALL REPAIRS BETWEEN MERRITT ST & OAK ST	08/2002 SDF 08/2002 SDF 11/2003 SDF 11/2003 SDF	0.000 D 0.000 P 0.060 I 0.500 C	0.020D 0.020P	 0.060I 0.500C			
		TOTAL >>>>	0.560	0.040	0.560	0.000	0.000	0.000

PIN/ALT ID	DESCRIPTION	FUND SOURCES	TOTAL 3-YEAR PROGRAM	3-YEAR PROGRAM - Starting October 01, 2003				
LEAD AGENCY	COUNTY	FUND/OBL DATE	($-millions)	Pre-FY2004	1st Year FFY04	2nd Year FFY05	3rd Year FFY06	Post-FFY 2006
839091 WESTCHESTER R&P <Exempt>	RT 6: LEXINGTON AVE- E. MAIN ST SFY 04/05 VENDOR PLACED PAVMENT SINGLE CRS OVERLAY	05/2004 SDF 05/2004 SDF	0.010 I 0.085 C		0.010I 0.085C			
		TOTAL >>>>	0.095	0.000	0.095	0.000	0.000	0.000
839095 WESTCHESTER R&P <Exempt>	RT 6; ANNSVILLE CREEK BRIDGE TO MAIN STREET: SFY 04/05 PMI	01/2006 SDF 01/2006 SDF	0.024 I 0.243 C				0.024I 0.243C	
		TOTAL >>>>	0.267	0.000	0.000	0.000	0.267	0.000
856116 NYSDOT CONST <Non-Exempt>	RT 35/202; PEEKSKILL- TACONIC STATE PARKWAY RECONSTRUCT HIGHWAY. ADD CENTER TURN LANE, UPGRADE SIGNALS, AND DRAINAGE IMPROVEMENTS (4.2). TOWNS OF CORTLANDT AND YORKTOWN	10/2003 SDF 10/2004 SDF 04/2005 SDF 04/2007 SDF 10/2007 SDF 10/2007 SDF	1.160 P 0.200 N 0.770 D 0.000 R 0.000 C 0.000 I		1.160P	0.200N 0.770D		2.000R 15.450C 1.545I
		TOTAL >>>>	2.130	0.000	1.160P	0.970	0.000	18.995

PIN/ALT ID	DESCRIPTION	FUND SOURCES	TOTAL 3-YEAR PROGRAM	3-YEAR PROGRAM - Starting October 01, 2003				
LEAD AGENCY	COUNTY	FUND/OBL DATE	($-millions)	Pre-FY2004	1st Year FFY04	2nd Year FFY05	3rd Year FFY06	Post-FFY 2006
856125 NYSDOT INTER <Exempt> >	ROUTE 35/202 @ LAFAYETTE AVE&HUDSON VALLEY HOSPITAL INTERSECTION IMPROVEMENT PROJECT. TOWN OF CORTLANDT.	05/2002 SDF 05/2002 SDF 05/2002 SDF 05/2002 SDF 06/2004 SDF 06/2004 SDF	0.000 P 0.000 D 0.000 N 0.000 S 0.100 I 1.000 C	0.060P 0.060D 0.010N 0.015S	0.100I 1.000C			
		TOTAL >>>>	1.100	0.145	1.100	0.000	0.000	0.000
856129 NYSDOT MISC <Exempt> >	ROUTE 35/202 CULVERT REPLACEMENT. TOWN OF CORTLANDT.	04/2003 SDF 04/2003 SDF 09/2003 LOC 10/2003 SDF 10/2003 SDF	0.000 R 0.000 D 0.000 M 0.075 I 0.600 C	0.012R 0.070D 0.003M	0.075I 0.600C			
		TOTAL >>>>	0.675	0.085	0.675	0.000	0.000	0.000
856133 NYSDOT INTER <Exempt> >	ROUTE 35 AND RTE 202 & LEXINGTON AVENUE INTERSECTION	05/2003 SDF 08/2003 SDF 08/2003 SDF 02/2004 SDF 02/2004 SDF 12/2004 SDF 12/2004 SDF	0.000 S 0.000 N 0.000 P 0.050 R 0.024 D 0.028 I 0.482 C	0.015S 0.015N 0.019P	0.050R 0.024D	0.028I 0.482C		
		TOTAL >>>>	0.584	0.049	0.074	0.510	0.000	0.000

a cooperative effort among

the City of Peekskill
the Town of Cortlandt
the Town of Yorktown
the New York State Department of Transportation
the New York Metropolitan Transportation Council
the Federal Highway Administration
and Westchester County

project consultant:
Edwards and Kelcey

In association with:
Short Elliot Hendrickson
Land Ethics