

Chapter 4 - The Canal Today

TABLE OF CONTENTS

- 4.1 Network of Waterways
- 4.2 The Canal Study Area
- 4.3 The Canal Environment
- 4.4 Present Canal System
- 4.5 Water Management
- 4.6 Transportation
- 4.7 Historic and Cultural Resources
- 4.8 Recreational Boating
- 4.9 Landside Recreation
- 4.10 The Canal and Economic Development
- 4.11 Commercial Shipping
- 4.12 Adirondack Park
- 4.13 Marketing the Existing Canal System
- 4.14 Summary - Opportunities and Constraints

LIST OF EXHIBITS

- 4-1 Network of Connecting Waterways
- 4-2 Canal Study Areas
- 4-3 NYS Topography
- 4-4 Necklace of Towns
- 4-5 Climatic Zones
- 4-6 Landforms in New York
- 4-7 Thematic Canal Region Locations
- 4-8 Thematic Canal Region Characteristics
- 4-9 NYS Canal System
- 4-10 NYS Canal Profiles
- 4-11 NYS Canal Drainage Basins
- 4-12 NYS Canal System Hydrology
- 4-13 NYS Canal System Reservoirs
- 4-14 Transportation Facilities
- 4-15 Historic Canal System
- 4-16 Historic Canal Structures

NEW YORK STATE CANAL RECREATIONWAY PLAN

- 4-17 National Register of Historic Places Sites and Districts
- 4-18 National Register of Historic Places Sites - Eligible Properties Sites
- 4-19 Interpretive Facilities
- 4-20 July 1994 Lock Activity - Erie Canal
- 4-21 July 1994 Lock Activity - Oswego, Champlain and Cayuga-Seneca Canals
- 4-22 Motorboat Registration, 1992 - County of Use
- 4-23 Canal Cruising Areas and Links
- 4-24 Existing Marinas
- 4-25 Regional and Local Recreation Facilities
- 4-26 Existing Canalway Trail
- 4-27 Commercial Shipping Trends and Tonnage
- 4-28 Adirondack Park Boundary and Reservoirs

APPENDIX

- A4 Canal-Owned Lands - Key Development Parcels

Chapter 4 - The Canal Today

"We've hauled some barges in our day,
Filled with lumber, coal, and hay,
And ev'ry inch of the way we know
From Albany to Buffalo.

Low bridge, ev'ry body down!
Low bridge, for now we're going through a
town.

You can always tell your neighbor,
You can always tell your pal,
If you ever navigated on the Erie Canal."

Fifteen Miles on the Erie Canal,
Folk song by Thomas S. Allen

Though lumber, coal and hay are little seen on the Canal of today, its legendary fascination remains intact. This chapter describes present conditions along the Canal, including land use, geography, ecology, infrastructure, water management, transportation, historic preservation, boating, recreation, economic development, commercial shipping, and relationship to the Adirondack Park. Each of the sections is a summary of information contained in a much more detailed Technical Study conducted for the Canal Recreationway Commission by specialists in that field, who were part of the Beyer Blinder Belle Consortium.

The chapter concludes with a recapitulation of the opportunities and constraints for Canal Recreationway development which were revealed through the study of existing conditions.

4.1 NETWORK OF WATERWAYS

The NYS Canal System is part of a network of waterways stretching from the Atlantic Ocean to the Great Lakes, the Mississippi River, and the Gulf of Mexico. Over 10,000 miles in length, the network interconnects vast centers of population, industry, agriculture, wilderness and recreation in Canada and the United States, including five

provinces and 31 states. See Exhibit 4-1, "Network of Connecting Waterways."

The network of waterways offers a wide array of travel options for commercial shipping and recreational boating. One important use of the NYS Canal today is the "through traffic" of recreational boaters transporting their boats between Canada, the Midwest and Florida, using the Intercoastal Waterway.

4.2 THE CANAL STUDY AREA

The study area for the Canal Recreationway Plan has three components, as shown on Exhibit 4-2, "Canal Study Areas," and described below.

Canal-Owned Land - Primary Study Area

The primary area of study includes approximately 36,000 acres of land owned by the Canal Corporation and used in conjunction with canal operations. Known as "canal-owned lands," these include waterways, locks, other canal structures, and lands adjacent to the canals owned by the Corporation. The Canal Corporation and the Thruway Authority have primary responsibility for these lands and facilities, and their use and disposition will be an important foundation of the Plan.

Canal Corridor - Secondary Study Area

The secondary study area includes the over two hundred cities, towns and villages immediately adjacent to the canals. The majority of canal users will come from this area, and they will be the primary beneficiaries of the recreation and economic-development projects of the Plan. Through zoning and other ordinances, local municipalities control the use of land adjacent to canal-owned land, and municipal cooperation will be needed to realize the land-use goals of the Plan. The secondary area totals over 750,000 acres.

Seven Planning Regions - Tertiary Study Area

The tertiary study area comprises the 25 counties through which the canals pass. These counties have a total area of over 1,800 square miles and a 1993 estimated population of over 4.5 million people. The Thruway 2000 legislation directs that county input be incorporated in the Canal Recreationway Plan "to the greatest degree practicable." Seven regional canal plans were completed to furnish this input and have provided a sound foundation for the statewide Canal Recreationway Plan.

The seven regions are delineated in Exhibit 4-2, "Canal Study Areas," and include:

- Region 1 - Erie - Niagara
- Region 2 - Genesee - Finger Lakes
- Region 3 - Eastern and Central Southern Tier
- Region 4 - Central New York
- Region 5 - Herkimer - Oneida - Montgomery
- Region 6 - Capital District
- Region 7 - Lake Champlain - Lake George.

4.3 THE CANAL ENVIRONMENT

Exhibit 4-3, "New York State Topography," makes clear the fundamental importance of the route of the Canal in travel through New York State. While the Hudson River Valley provides an excellent route north from New York City, passage to the west is constricted by the Catskills and the Adirondacks. The only break is at the Mohawk River, the lowest point in the Appalachian Mountain chain north of Birmingham, Alabama. It is this route that made the Canal System possible, and created the "Pathway to Empire."

The study of the canal environment included visual inspection, an analysis of the ecological, historical, and archeological resources of the Canal System, and review of the regional canal plans and other studies, including "Conserving

Open Space in New York State," prepared by the NYS Department of Environmental Conservation (NYSDEC) and the NYS Office of Parks, Recreation and Historic Preservation (NYSOPRHP); and the "NY Statewide Comprehensive Outdoor Recreation Plan" (SCORP) prepared by the NYSOPRHP.

The Canal Setting

The Canal System spans and hence links five separate river drainage basins. Lake Champlain and its tributaries flow north to Canada and the St. Lawrence River. The Hudson-Mohawk River system flows south to the Atlantic Ocean at New York City. Successively westward across the state, the Oswego River and Genesee River flow north to Lake Ontario, and the Lake Erie drainage area flows west to Lake Erie.

The Canal System offers much diversity of environment to one who traverses its entire length. From Lake Erie, the Canal starts eastward through the outskirts of metropolitan Buffalo and the level plain south of Lake Ontario. After stepping down the Niagara Escarpment, the Canal runs through open farmland from Lockport to Rochester without a single lock. East of Rochester and the Genesee River the Canal begins another descent through the more wooded, undulating farmland of the Ontario Drumlins region. Intermittent "widewaters" expand the surface water well beyond the dredged channel limits, adding wetland at the edge.

East of Lyons, as far as Oneida Lake, the Canal levels off again considerably. Of the entire Canal System this segment offers the most aquatic resources for recreation, as well as the greatest public access to them. Much of the route here diverges from that of the Old Erie Canal, bypassing Syracuse and other settlements and thereby affording more natural scenery of forest and wetland. Chief among wetlands along the Canal is the Montezuma marsh, protected by the state and federal governments through several wildlife management areas and the Montezuma National Wildlife Refuge. Hunting, especially for waterfowl, attains its highest appeal in the vicinity of this canal segment. Entering the Montezuma

area from the south, the Cayuga-Seneca Canal System opens boating access to the two largest Finger Lakes. The canal segment between Syracuse and Oneida Lake is the system's busiest, attracting boaters to and from the populous Oswego Canal connection north to Lake Ontario.

Not far east of Oneida Lake, the Canal takes its general direction and often its bed from the Mohawk River, an association that lasts all the way to the Hudson River. This canal segment resembles the Oswego Canal in its relatively plentiful water supply, frequency of locks, and large settlements interspersed with stretches of rugged forested terrain and rolling farmland. The steepest grade occurs in the final two miles above the Hudson as the Canal drops quickly through the five locks of the Waterford Flight.

The most dramatic scenery, at least in terms of physical relief, belongs to the Champlain Canal. From the confluence of the Mohawk River and the Hudson River, the Canal follows the Hudson north in a lowland, overlooked by the distant Taconic Mountains of Massachusetts and Vermont to the east and a nearer mixture of farmland and forest. North of Hudson Falls, the last major settlement, the Canal diverges from the Hudson and hugs the edge of the Adirondack Upland to Lake Champlain at Whitehall.

Canal Communities

Almost all the cities and villages that line the canals today were developed in the canal era, and many grew to their present size when the Canal was the nation's most important passage to the west. Small settlements, spaced from seven to ten miles apart to service the mule-drawn packet boats, developed into larger villages and cities with the explosive growth of commerce and immigration.

Canal communities form the backbone of upstate New York, paralleling the Canal, the railroad, and the Thruway. Communities are of four types, as follows:

- *Four large metropolitan areas:* Buffalo, Rochester, Syracuse, and the Albany - Capital District.
- *Thirteen smaller cities:* Lockport, Geneva, Ithaca, Oswego, Fulton, Rome, Utica, Little Falls, Amsterdam, Schenectady, Glens Falls, Plattsburgh, and Mechanicville.
- *Fifty-seven villages and hamlets.*
- *One hundred and thirty-six towns:* These include the villages and hamlets mentioned above plus the land between these settlements. Towns vary from small rural populations to large suburban communities.

Exhibit 4-4, "Necklace of Towns," shows the relationship of canal communities to the Canal. Almost all the canal communities have frontage on the Canal and direct access to canal boating traffic. Exceptions are the four large cities (Buffalo, Rochester, Syracuse and Albany), where the historic canal was abandoned and new routes built away from the city centers.

Ecology and Conservation

The vast canal waterway system provides an important resource for the natural ecosystem of upstate New York. While much of the canal environment has lost its original distinctive biological character, approximately 90,000 acres of protected conservation area are located within the 750,000-acre primary and secondary canal study area. Protected areas include: forest and natural preserves, freshwater wetlands, lands under conservation easement, and federal, state and local wildlife management areas. In addition, 189 sites are designated as significant habitat areas by the NYS Department of Environmental Conservation. Particularly important to the natural environment of the Canal System are the over 3,000 acres of federally-protected wetlands in the Montezuma National Wildlife Refuge and the nearby Galen Marsh, Howland Island and Cayuga Lake State Wildlife Management Areas, all located between the Erie and Cayuga-Seneca Canals in the central part of the system.

Weather Patterns

In much of the canal region, summers are warm and dry and winters are cold and snowy. The greatest deviation from this pattern occurs in the upper Mohawk River Valley, roughly between Utica and Rome, where a highland extension of the Adirondack climatic zone (very cool wet summers, extremely cold snowy winters) meets the Susquehanna Highlands of the Southern Tier (cool wet summers, cold snowy winters). See Exhibit 4-5, "Climatic Zones."

Geography, Flora and Fauna

The natural differences in land form and climate along the Canal foster distinctive flora and fauna which, when combined with human cultural activities, further enhance landscape diversity.

Thematic Canal Regions

The analysis of geographic setting and ecology reveals that the canal corridor can be seen as a series of "Thematic Canal Regions," each of which has sufficient coherence as a physical place that it can be described and experienced by canal visitors as distinctly different from other segments. The differentiating characteristics are predominant land use, canal character, land form, characteristic landscape, settlement pattern and interpretive theme.

- *Predominant Land Use:* The overall fabric and intensity of land use along the Canal, differentiating between segments that are largely built (community), or largely unbuilt (farming, woodlands or wetlands).
- *Canal Character:* The type of canal construction, including dug remnants of Clinton's Ditch, engineered segments of the Old Canal or of the 1918 Barge Canal, or canalized rivers and lakes.
- *Land Form:* Predominant or prevailing topography (drumlins, plains, valleys, etc.) over extended distances, as shown on state physiologic maps (see Exhibit 4-6, "Landforms in New York").
- *Characteristic Landscape:* In settled regions: urban or suburban; in unsettled regions:

characteristic vegetation. Correlates with Predominant Land Use.

- *Settlement Pattern:* The nature of the prevailing pattern of settlement along the Canal, differentiating between major cities, small cities, and villages.
- *Interpretive Theme:* Factors along the Canal that are unique in terms of history, culture, location, or land use, and that could be the focus of a theme to be incorporated into an Interpretive Plan for the Canal.

The application of these factors to the canal corridor and adjacent settings has resulted in the identification of fifteen thematic regions:

1. Niagara Frontier
2. Ontario Lake Plain
3. Metropolitan Rochester
4. The Drumlins
5. Cayuga-Seneca Canal
6. Finger Lakes
7. Fish and Wildlife Conservation Area
8. Gateway to the Lakes
9. Oneida Lake
10. Upper Mohawk Valley
11. Lower Mohawk Valley
12. Eastern Gateway
13. Upper Hudson River Valley
14. Champlain Canal
15. Lake Champlain

Exhibit 4-7, "Thematic Canal Region Locations," identifies the location of each canal segment; and Exhibit 4-8, "Thematic Canal Region Characteristics," summarizes, in matrix form, the character of each segment. The intent is to establish a basis for understanding what is unique about each segment of the Canal System and to create a framework for defining the Recreationway as both a continuous system and a series of diverse themes and experiences.

It is recognized that the "boundaries" between regions are not necessarily fixed. The predominant characteristics of each region generally blend with those of the next region, and thus the boundaries fall within a transitional area.

Region Descriptions

Four of the regions focus on major metropolitan areas: Niagara Frontier (Buffalo), Metropolitan Rochester, Gateway to the Lakes (Syracuse), and Eastern Gateway (Capital District). The prevailing land use for each is a developed community and the setting for the Canal is predominantly urban/suburban. The Gateway to the Lakes region and the Eastern Gateway region also feature significant river valleys through which the Canal passes.

Three other regions are in major river valleys: Upper Mohawk, Lower Mohawk, and Upper Hudson Valley. The characteristic landscape for these regions is largely wooded, with significant areas of farmland. Settlement is in small cities and villages which developed during the canal era.

The Fish and Wildlife Conservation Area also follows a river, but the significant wetlands along the Seneca River create a very different environment, with little settlement. This region includes the Montezuma National Wildlife Refuge and associated state wildlife management areas, constituting a major environmental reserve and visitor attraction.

Four regions are distinguished by a canal that is largely constructed, and by settlement in villages that developed along the Canal. These regions are Ontario Lake Plain, Drumlins, Cayuga-Seneca Canal, and Champlain Canal north of Fort Edward. The characteristic landscape varies, and includes open plains between Buffalo and Rochester, more rolling drumlins east of Rochester, and the wide and dramatic Champlain Valley.

The final three regions are primarily lake environments, including Finger Lakes, Oneida Lake, and Lake Champlain. All provide for passage by canal traffic, but the physical environment is dominated by the lake and its wooded and farmed setting. Settlement is primarily in villages or in lakefront cottages.

In all regions, continually recurring themes are the extraordinary beauty of the natural environment; the diversity of the plains, wetlands, lakes, wooded areas, and farms through which the

Canal passes; and the unique historical setting of the canal communities.

4.4 PRESENT CANAL SYSTEM

The present canal alignment is that of the Barge Canal, completed in 1918. This system more fully utilizes natural waterways than was possible with the more primitive engineering of the older canals. The system is a complex network of natural and man-made structures which interact to establish a navigable waterway.

Components of the Canal System

The Canal System is 524 miles long and consists of four interconnected canals, as described below and shown in Exhibit 4-9, "NYS Canal System."

- *The Erie Canal:* Stretching from Tonawanda on the Niagara River to Waterford, the Erie Canal is 348 miles long and consists of 220 miles of canalized rivers and lakes and 128 miles of land-cut channel. It has 35 locks, two guard locks, twelve dams, and 24 guard gates.
- *The Champlain Canal:* Extending from Waterford to Whitehall on Lake Champlain, the Champlain Canal is 60 miles long, of which 37 miles are canalized river and 23 miles are land-cut channel. It has eleven locks, two dams, and one guard gate.
- *The Oswego Canal:* Utilizing the entire 24-mile Oswego River, from its junction with the Erie Canal at Three Rivers to Oswego on Lake Ontario, the Oswego Canal has seven locks and seven dams.
- *Cayuga-Seneca Canal:* Extending from Geneva on Seneca Lake to the May's Point junction with Erie Canal, the Cayuga-Seneca Canal extends 92 miles, utilizing Seneca Lake, Cayuga Lake and the Seneca River. It consists of 89 miles of canalized rivers and lakes and three miles of land-cut channel. It has four locks, one dam, and four guard gates.

A series of reservoirs are used to maintain flow levels in the Canal, contributing water through a system of feeder streams. A number of abandoned canals still exist, including the Old Erie Canal, the Genesee Valley Canal, the Black River Canal, and the Chenango Canal. Flow is generally not directed through these canals for navigation purposes, however, nor do they receive canal maintenance.

Structure of the Canal

The highest point on the Canal System is at Lake Erie, elevation 572.4 feet. Boats are lowered through the locks on the Erie Canal to the canal junction at Three Rivers, raised to the summit at Rome (420.4 feet), and lowered again to sea level on the Hudson River.

The summit of the Champlain Canal is at Smith's Basin (140.1 feet); of the Oswego Canal at Oswego (363 feet); and of the Cayuga-Seneca Canal at Seneca Lake (446 feet). See Exhibit 4-10, "NYS Canal Profiles."

Canal channels vary in width from 75 feet in land-cut channels to 200 feet in river sections. The depth of water on the Canal is designed to be 12 feet, except on the Oswego Canal and the Erie Canal from Waterford to Three Rivers, where it is 14 feet. During winter drawdowns, most major land-cut sections are closed off and drained to approximately two feet. Bridge clearances (vehicular or railroad) are 20 feet on the Oswego Canal and on the Erie Canal from Waterford to Three Rivers. All other bridges provide a clearance of at least 15 feet 6 inches.

There are 57 locks on the present Canal System. Lock chambers are 45 feet wide and 328 feet long. In addition to the locks, the Canal Corporation maintains over 1,980 canal structures, including guard gates and locks; fixed and movable bridges; fixed, movable and taintor dams; dry docks; and many other structures. The Canal System also includes 27 hydroelectric plants whose operating-license conditions play a significant role in water management.

The east and west entrances to the Canal System at Waterford and the Tonawandas, respectively, are from U.S. Government waters. Federal locks on U.S. waters, operated by the U.S. Army Corps of Engineers, are at Troy on the Hudson River and Black Rock on the Niagara River.

Canal Operations

The Canal Corporation, headquartered in Albany, has three divisional offices which handle operations in various regions of the state. Within each division are several maintenance sections responsible for specific geographic areas. The staff devoted to the operation and maintenance of the Canal System in 1994 totaled 687 persons, many of whom are members of families who have worked on the Canal for generations.

The Canal System is generally operational from early May to November each year, with the Erie Canal from Three Rivers west to Buffalo and the Cayuga-Seneca Canal closing in early November, and the Oswego, Champlain and remaining portions of the Erie Canal staying open till late November. Operational hours are currently from 7:00 a.m. to 10:30 p.m.

Although the Canal Corporation is responsible for virtually all canal operations, many other agencies have a role in making the system work. Many local governments operate canal recreational facilities; the NYS Office of Parks, Recreation, and Historic Preservation operates and maintains nine park and recreation facilities along the Canal; NYS Department of Environmental Conservation oversees wildlife, water quality, and natural resources along the Canal, and regulates dredging; the U.S. Army Corps of Engineers regulates canal dredging projects; and the vehicular state bridges over the Canal are maintained by the NYS Department of Transportation.

During the navigation season, the Canal Corporation maintains navigable water levels in the canals through dredging methods, and operates all locks and river-flow-regulating structures, such as guard gates and dams. In the winter, land-cut (non-river) sections of the Canal

System are closed and most are drained to prevent ice damage and blockages. River sections, whose levels are regulated during the navigation season, are returned to a free-flowing condition in winter.

Dredging to maintain legal depth of water for commercial and recreational boats is essential to canal navigation. However, it is regulated by and requires approval from the U.S. Army Corps of Engineers and the NYS Department of Environmental Conservation. A five-year master plan for dredging has recently been approved for certain areas of the Canal. PCB contamination in the Hudson River segment of the Champlain Canal, however, continues to constrain dredging in this area.

Condition of Facilities

Existing canal infrastructure is for the most part in acceptable to good working condition. However, there are concerns that should be addressed if the system is to adequately meet the needs of recreational users. Significant areas of concern include: the need for adequate funding to construct new recreational facilities; and the need to modify existing canal infrastructure to make it more user-friendly for the recreational boater. Water pollution in various canal segments also needs to be addressed, particularly PCB contamination in the Hudson River, which will seriously hamper expansion of recreational use along this section.

Capital Plan

The *Five Year Capital Plan for the Maintenance and Improvement of Canal Infrastructure*, instituted by the Thruway Authority, has begun to make an impact on structures that had become deficient. The Capital Plan will result in the expenditure of \$106.7 million during the period 1993-1997.

Canal-Owned Lands

Canal-owned lands total almost 56 square miles, or over 36,000 acres. Of this, approximately one-third, or 11,000 acres, is under water or in wetlands. The remaining dry lands total about

24,000 acres and include 47 terminal sites, 57 lock sites, dry docks and maintenance areas, canal parks and recreation areas, and many narrow strips of land along the sides of the canals.

Almost all canal-owned lands adjoin the present Canal. After the present-day Canal was completed, some sections of the earlier canals were abandoned and sold.

The size and configuration of canal-owned parcels varies within the system. Along artificial land-cut sections of the Canal (primarily the Old Canal), there is a strip of canal-owned land adjacent to the water. On river sections, parcels of land were purchased irregularly – in some areas adjacent land is state-owned, in others it is not.

Canal-owned land not needed for canal purposes is currently available to public and private users through a permitting process. Approximately 3,500 permits are presently outstanding, accounting for many of the usable parcels of canal-owned land. Uses vary from "enhancement" permits held by homeowners to permits held by local municipalities for sizable canalside parks.

Permits carry a 30-day revocation clause but, in practice, most are continued year after year and, in effect, become long-term occupancies. Annual permit income to the Canal Corporation is approaching \$1 million.

In 1991, New York State voters approved an amendment to the State Constitution that authorized long-term leasing of canal-owned lands. The amendment stipulated that all revenues from permitting and leasing (as well as from tolls or from any sale of canal lands) is to be placed in the Canal System Development Fund, to be used solely for canal-improvement purposes.

4.5 WATER MANAGEMENT

The Canal System and watershed, including the canals, reservoirs, feeders, regulated streams, and lakes, encompasses approximately 40 percent of

the freshwater resources of New York State, and drains nearly one-half of the state's 49,000-square-mile area. While navigation is the primary function of the Canal System, canal waters have great importance for power generation, water supply, irrigation, flood-plain management, and recreation. For the most part, these varied water uses are compatible, and there is ample water volume in the system to provide for significant increases in recreational boating and lockages.

Major Drainage Basins and Hydrology

Drainage Basins

Eight major drainage basins are tapped or augmented by the Canal System, as shown on Exhibit 4-11, "NYS Canal Drainage Basins," and listed below:

- Lake Erie/Niagara River Basin
- Lake Ontario Basin – West
- Lake Ontario Basin – Central
- Genesee River Basin
- Oswego River Basin
- Mohawk River Basin
- Upper Hudson River Basin
- Lake Champlain Basin

Hydrology and Reservoirs

The distribution of water within the Canal System is shown on Exhibit 4-12, "Canal System Hydrology." The utilization of rivers and lakes over major portions of the system allows natural flow to meet much of the water-supply needs of the Canal. The major natural portions of the Canal System include the Mohawk, Hudson, Seneca, Oswego and Clyde Rivers; Seneca, Cayuga and Oneida Lakes; and Tonawanda Creek.

Some portions of the Canal System require water augmentation from outside sources. Water is supplied to the points of highest elevation, or summit levels, and is allowed to flow by gravity to lower elevations. A series of "feeder reservoirs" operated by the Canal Corporation is used to help maintain water flow. There are twenty-one reservoirs, the largest of which are the Hinckley Reservoir (7,542 acres) and Delta Lake

(3,137 acres). Reservoir location and flow direction are shown on Exhibit 4-13, "NYS Canal System Reservoirs."

Water-management procedures at the reservoirs involve:

- provision of water-supply needs for navigation;
- drawdowns during the nonnavigational season to provide water storage;
- maintenance of water levels for recreational purposes during the summer; and
- provision of minimum releases from each reservoir to satisfy downstream ecological, recreational and aesthetic needs.

Existing Surface-Water Classifications

Water quality varies substantially along the Canal System. In many areas, it is not suitable for drinking or contact recreation, due to effluent discharges and heavy use of the Canal for navigation.

Surface waters in New York State are classified according to their best *potential* use, from Classes AA and A, the highest quality, suitable for drinking; to B, contact recreation; C, fishing; D, secondary contact recreation; and N, the lowest class. The following describes existing water quality in each segment of the Canal.

- *Erie Canal*: Generally either Class B or C. Problem areas include some toxic waste in the Lockport/Gasport area and PCB contaminants in the Utica area. A 19-mile stretch along the Mohawk River around Schenectady is classified as A, and the City of Cohoes and the Town of Colonie use the Canal as a water supply.
- *Cayuga-Seneca Canals*: Class A and AA, in Cayuga and Seneca Lakes; Class A, in the portion of the Cayuga-Seneca Canal located from the top of Seneca Lake to Cayuga Lake and to just north of Lock CS-1; Class C, in the last 3.2 miles until joining with the Erie Canal.

- *Oswego Canal:* Alternates between Class B and Class C. Class C waters occur in the vicinity of larger cities and locks with hydroelectric facilities.
- *Champlain Canal:* Varies from Class A in the vicinity of Waterford, where the Hudson River is used as water supply, to Class D. The entire land-cut portion is classified as Class C.

Fishing

Highly productive fisheries are found in the large lakes (Oneida, Seneca, and Cayuga), and the Canal's river systems provide a diversity of shallow- and deep-water fish habitats. For example, the Oswego River is well known for salmon fishing, and fisheries in the Mohawk River have been estimated to provide eight to ten million angler days of fishing each year. Fewer productive habitats are found in the land-cut portions of the Canal, which tend to be more uniform in depth.

Important fish-spawning areas include certain shallow areas along the Canal, vegetated areas, mouths of tributaries, and the tributaries themselves.

Water Supply

Many communities, businesses, and individuals rely on the Canal and its associated lakes and reservoirs for water supply. Major uses are as follows:

- *Water for Industry:* More than 40 different industrial or manufacturing concerns maintain plants or facilities along the Canal System.
- *Water for Agriculture:* Irrigation water from the Canal is important to the state's farms. Based on irrigation of an estimated 50,000 acres, the irrigation benefit along the system has been estimated at \$5 million, but the actual acreage under irrigation is not known.
- *Potable Water:* There are 19 potable water intakes on the system, mostly on Seneca and Cayuga Lakes. The canals also supply water

indirectly by helping to recharge groundwater aquifers.

- *Waste-water Assimilation and Dilution:* The Canal serves as a receiver of water discharged from a number of waste-water treatment facilities. While this provides a significant benefit to many communities along the Canal, municipal budgeting constraints sometimes delay improvements to treatment facilities and, as a result, compromise water quality.
- *Water Power:* The Canal System's 27 hydroelectric plants produce 174 megawatts of power and are a significant source of the state's power supply.

Flood-Plain Management

A large percentage of canal-owned lands are located in areas identified as flood plains. The regulations of the NYS Department of Environmental Conservation mandate that certain agencies manage state-owned lands so as to meet with flood-plain management requirements of 6NYCRR Part 502. Where applicable, these provisions should be addressed.

Canal structures control the levels of Cayuga, Seneca and Oneida Lakes, and reservoirs assist materially in controlling water supply, particularly during the spring season.

While comprehensive studies have not been done to evaluate the water-level management and ice-control benefits of the Canal, the NYS Department of Transportation has estimated the benefit to be in the range of \$8 to \$15 million annually.

4.6 TRANSPORTATION

The Canal System enjoys exceptional transportation access via four major airports, seven Amtrak railroad stations, numerous bus routes, local roads and a number of interstate highways, including the NYS Thruway. These transportation links serve the over 4.5 million people living within the study area, and also provide access from major national and

international population centers. (See Exhibit 4-14, "Transportation Facilities.") In particular, the close proximity of the NYS Thruway to major portions of the Canal creates a significant opportunity for developing and promoting the Canal System.

Airport Access

National and international scheduled air service is provided at Albany, Syracuse, Rochester and Buffalo. Direct flights are available throughout the Northeast, the Midwest (Chicago, Cleveland), the West (Denver, Los Angeles) and the South (Atlanta). The Canal is within a five- to ten-mile drive from each of these airports.

Additional international access for canal visitors is available via New York City/JFK, Newark or Boston/Logan Airports. On average, ten connecting daily flights from Boston and 22 connecting daily flights from New York City's two international airports provide access to the four major canal-city airports.

Train Service

Amtrak provides rail access to Albany, Schenectady, Amsterdam, Utica, Rome, Syracuse, Rochester and Buffalo. Six trains per day traverse this route, which is in close proximity to, and often within sight of, the Erie Canal. Additional rail access is provided between Schenectady and Plattsburgh, along the Champlain Canal, with two trains per day.

Rail freight service is provided to most canal cities. Between Albany and Buffalo, service is on the Conrail track; between Albany and Whitehall, it is on the Delaware and Hudson track.

Bus Service

Intercity bus service is provided by Greyhound and Empire Trailways to the four major canal cities of Buffalo, Rochester, Syracuse and Albany. Local commuter bus carriers out of the major cities serve a number of smaller communities: Lockport, the Tonawandas, Spencerport, Brockport, Pittsford, Fairport,

Palmyra, Newark, Lyons, Clyde, Rome, Utica, Herkimer-Mohawk, Fonda, Amsterdam, Schenectady, Cohoes, Glens Falls, Phoenix, Fulton, Oswego, Ithaca and Geneva.

Approximately half of the smaller canal towns, hamlets and villages are served by various scheduled bus carriers. The major deficiencies are along the full length of the Champlain Canal, much of the Cayuga-Seneca Canal, and along the Erie Canal from Amsterdam to Utica.

Canal/Thruway Relationships

The entire length of the Erie Canal is paralleled by the east-west spine of the NYS Thruway. Along one-third of the length of the Canal, the Thruway provides excellent canal access and, in many instances, the Canal is within sight of Thruway interchanges. A second one-third of the Canal is within five miles, and the final one-third is no more than fifteen miles from the Thruway.

The east-west spine of the Thruway is fed at its quarter points by a north-south grid of interstate highways, including, at Albany and along the Champlain Canal, the Northway and the Thruway (I-87), and I-90; at Utica, I-790; at Syracuse, I-81, I-481, and NYS 481; at Rochester, I-390; and at Buffalo, the Thruway (I-90) and I-190. Highways I-87 and I-81/NYS 481 have the same close relationship to the Champlain and Oswego Canals, respectively, as the Thruway has to the Erie Canal.

The proximity of the Canal to the Thruway and interstate system creates a significant opportunity for motorists to see, access and learn about the Canal. Specific examples include:

- *Iroquois Rest Stop:* The only existing rest stop with direct adjacency to the Canal (i.e., no intervening roads or development), Iroquois is near Herkimer with westbound access. Direct pedestrian access to the Canal is possible.
- *Fort Hunter to Iroquois Rest Stop:* Westbound from Fort Hunter to the Iroquois Rest Stop, there are many opportunities for "scenic pull-outs."

- *East of Herkimer:* Two miles east of Herkimer, for a two-mile segment the westbound Thruway is directly adjacent to the Canal.
- *Utica:* A seven-mile segment on the eastbound Thruway at Utica has a primary relationship with the Canal, including access at Exit 31.
- *Weedsport:* A four-mile segment just east of Exit 40 (Weedsport/Auburn) is adjacent to the Canal.
- *Potential Vehicular Pull-Offs:* At Lock 13 on the Erie Canal, between Fultonville and Palatine Bridge, the Thruway is directly adjacent to the Canal, with no intervening land use, and significant land area is available. Smaller potential Thruway pull-offs exist along the Erie Canal at Dunsbach Ferry, at the Genesee River crossing, and at the Seneca River crossing in the Montezuma National Wildlife Refuge.
- *Pattersonville Rest Stop:* Westbound Thruway travelers could access the Old Erie Canal State Park, Lock 10, and several boat-launch sites.
- *Port Byron Service Area:* Eastbound travelers could access the Canal, the Howland Island Wildlife Management Area and the Montezuma National Wildlife Refuge.

Local Access

While the canal corridor is very easy to get to, finding the Canal itself is sometimes more difficult. In many, if not most areas, directional signage to the Canal from population centers and major roads is poor, and the Canal itself is often not identified. In addition, public access to the Canal is limited by the relatively low number of public parks and access points, by a lack of available parking, and by the lack of road access to many parcels of canal-owned land.

Scenic Byways

In the mid-1980s the NYS Department of Environmental Conservation established a state Scenic Byways program which over time designated approximately 220 miles of scattered

and unconnected rural roads. Of these, the following have a canal orientation:

- *The Revolutionary Trail:* (NYS 5 from Albany to Utica and NYS 49 from Utica to Rome, along the northern bank of the Erie Canal/Mohawk River).
- *The Champlain Trail:* (US 4 from Hudson Falls to Whitehall, NYS 22 from Whitehall to Ticonderoga, Port Henry, Plattsburgh, Champlain and Rouses Point).

In 1991, with the passage of the federal Intermodal Surface Transportation Efficiency Act (ISTEA) legislation, and in 1992, with the passage of corresponding NYS legislation, a Scenic Byways program was established, to be administered by the NYS Department of Transportation. The Scenic Byways program includes all DEC-designated roads, plus others to be added over time.

4.7 HISTORIC AND CULTURAL RESOURCES

The formative role of the Canal in the history of New York State and the nation has led to an extraordinary abundance of historic, cultural, archeological, educational, and interpretive resources in the canal corridor. The Geographic Information System (GIS) inventory and research done for this study have identified over 1,400 historic sites, cultural resources and interpretive facilities along the Canal System. Many are protected through National Register or other historic designation, lovingly tended by knowledgeable caretakers, and open to the public. Many more, however, are neglected, in disrepair, or in danger of demolition. In addition, many sites that are open to the public suffer from intermittent staffing and low marketing budgets. There is no overall coordination of canal historic and interpretive facilities, and promotion of the Canal as an "historic treasure" is minimal.

The following summarizes the known historic and interpretive facilities in the canal corridor.

Historic Canals

The present alignment of the Canal is the latest in the long series of widenings and realignments that gradually improved the canals for commercial navigation. From the time of Clinton's Ditch through the Barge Canal era, engineers continually straightened the canals, widening and deepening the prism, constructing larger locks, and building new segments to better utilize natural waterways and avoid difficult terrain.

The most significant realignment was developed for the 1918 Barge Canal, when a 65-mile stretch of the Erie Canal between Montezuma and Rome was moved north from Syracuse and the Old Canal villages to utilize the Seneca and Oneida Rivers and Oneida Lake. A portion of the Old Canal in this section, from east of Syracuse almost to Rome, has been preserved as the Old Erie Canal State Park. Many smaller discontinued segments are preserved across the state, including a number that have been rewatered and/or made into parks. These include Old Lock 62 Canal Park in Pittsford; Palmyra Macedon Aqueduct County Park; Lock Berlin County Park near Lyons; the Erie Canal Seven-Mile Park near Camillus; and projects of the Glens Falls Feeder Alliance in the Glens Falls area.

The "Historic Canal System" is shown as Exhibit 4-15.

Historic Canal Structures

The GIS inventory lists 713 historic canal structures, categorizing them by type and region. Structures include: locks, aqueducts, dams, bridge abutments, bridges, receivers, weirs, weighlock buildings, waste gates, wharves, etc. Bridge abutments (484) and locks (182) account for the majority of historic canal structures. See Exhibit 4-16, "Historic Canal Structures."

National Register of Historic Places

The National Register of Historic Places, established by the National Historic Preservation Act of 1966, is the official listing of the nation's

cultural resources that are deemed worthy of preservation. The National Register includes districts, structures, buildings, archeological sites, or objects of national, state, and local significance. There are 296 National Register sites and 156 National Register Eligible sites listed in the Canal GIS Inventory. It should be noted that the inventory is not comprehensive. See Exhibit 4-17, "National Register of Historic Places Sites and Districts," and Exhibit 4-18, "National Register of Historic Places - Eligible Properties Sites."

Examples of National Register sites located along the Canal include: Lockport Industrial District; Second Genesee Aqueduct, Rochester; Seneca Falls Village Historic District; Jordan Village Historic District; Vischer Ferry Historic District, Clifton Park; Mechanicville Hydroelectric Plant, Halfmoon; Old Champlain Canal, Waterford; Glens Falls Multiple Resource Area, Glens Falls.

Cultural Resources

The canal corridor contains 175 museums, universities, colleges and libraries, ranging from large, state-sponsored institutions to small local organizations. Some of the educational institutions have research interests related to the Canal – for example, the engineering programs at Cornell University and Rensselaer Polytechnic Institute, or the history programs at the University of Rochester and Monroe Community College.

Many museums are located within the canal corridor and a number are within walking distance of the Canal. Museums provide a rich visitor resource, and will be an important part of the tourism facilities available to canal visitors.

Archeology

The entire canal corridor has a very high sensitivity for archeological resources, based on culture, history and environmental factors. While most prehistoric archeological sites are not visible, they can be interpreted to provide a more complete picture of the canal corridor. Not only would this increase awareness of the time depth

of the corridor's history, but it would add to the inventory of visitor attractions.

There are 40 National Register archeological sites located in the canal corridor, including prehistoric, Revolutionary, Colonial, canal-era, and late-19th-century-industrial sites.

Interpretation

Considering the historic importance and length of the Canal System, interpretive facilities are few. The largest number are owned and operated by the NYS Office of Parks, Recreation and Historic Preservation, including NYS Historic Sites and Urban Cultural Parks. See Exhibit 4-19, "Interpretive Facilities."

New York State Historic Sites

The NYS Bureau of Historic Sites owns 35 historic sites, distributed throughout the state. In addition to site-specific staff personnel, each site is operated under the direction of regional supervisors and state headquarters staff at Peebles Island in Waterford. Bureau staff includes interpreters, curators, conservators, architects, preservationists, and archeologists. The seven state historic sites located within the canal study area include:

- Old Fort Niagara, Youngstown
- Ganondagan State Historic Site, Victor
- Fort Ontario, Oswego
- Oriskany Battlefield, Oriskany
- Herkimer Home, Little Falls
- Guy Park, Amsterdam
- Schoharie Crossing, Fort Hunter.

New York State Heritage Areas/Urban Cultural Parks

The NYS Heritage Areas/Urban Cultural Parks System, created by legislation in 1982 and 1994, consists of the Mohawk River Valley Heritage Area and 14 Urban Cultural Parks. The Mohawk Heritage Area includes a significant portion of the Erie Canal west of Schenectady. Each Urban Cultural Park, located in a community's historic urban core, is designed around a central theme that provides insight into local history. Eight of the Urban Cultural Parks lie within the canal corridor: Buffalo, Rochester, Seneca Falls,

Syracuse, Schenectady, Albany, Troy-Cohoes-Waterford, and Whitehall.

Federal Historic Sites

There are three important federal historic sites located within the canal corridor. They are:

- Women's Rights National Historic Site in Seneca Falls.
- Fort Stanwix National Historic Site in Rome.
- Saratoga National Battlefield.

Other Interpretive Facilities and Education

Other than the State Historic Sites and programs, most canal interpretive facilities are owned and/or operated by private not-for-profit groups. These have included:

- The Historical Society of the Tonawandas museum and research center in Tonawanda.
- The Erie Canal Museum, Syracuse, and the Canal Education Center operated by the Museum in DeWitt as part of the Old Erie Canal State Park.
- The Erie Canal Seven-Mile Park, Camillus.
- The Chittenango Landing Canal Boat Museum, Chittenango.
- The Canal Town Museum, Canastota.
- The Cottage Lawn Museum, Oneida.
- The Erie Canal Village, Rome.

In addition to the above site-specific facilities, the Canal Corporation operates the tugboat "Urger," a floating museum and educational center. Throughout the canal season, the Urger travels from port to port, presenting educational programs to school children and hosting on-board and canalside events. An additional floating education program is presented by the NYS Museum on board the "Discovery," a re-creation of a "batteau" as used on the 1790s Mohawk Canals. The "Discovery" also participates in research projects.

4.8 RECREATIONAL BOATING

Canal Boating Trends

Expansion of recreational boating is one of the most important goals of the Canal Recreationway Plan. As commercial shipping has declined on the Canals, recreational boating has been on the increase. Although there are no data for boats that do not use the locks, usage of the locks by recreational boats has risen to a total of 137,000 lockages in 1993. (A lockage is one trip through a lock by a single boat. More than one boat often occupies the same lock.)

Table 4-1, "Annual Canal Traffic Flows," below, shows the increase in recreational boating and the contrasting decline in commercial shipping since 1983. The dramatic decline in commercial traffic during 1994 resulted from the shutdown of Plattsburgh Air Force Base and the cessation of jet-fuel shipments on the Canal. The 1994 decrease in recreational lockages is a result of a number of factors, most notably the imposition of canal tolls for the first time in more than a century, and the weakness in Canadian currency relative to the dollar.

**Table 4-1
Annual Canal Traffic Flows
(Selected Years)**

Year	Recreational Lockages (Craft)	Commercial Traffic (Tons Shipped)
1983	95,000	580,000
1988	152,000	416,000
1990	158,000	263,000
1991	148,000	214,000
1992	132,000	162,000
1993	137,000	154,000
1994	116,000	68,000

As is shown in Exhibits 4-20, "July 1994 Lock Activity - Erie Canal" and 4-21, "July 1994 Lock Activity - Oswego, Champlain and Cayuga-Seneca Canals," boating activity varies considerably from lock to lock.

The busiest area on the Canal is between Syracuse and the boating communities around Oneida Lake. Lock E-23, at the western entrance to the lake, had over 10,000 lockages in 1992, more than twice those recorded at any other lock. The second busiest boating area in 1992 was the cruising area of the Mohawk River in the Capital District, where Lock E-7 in Niskayuna recorded almost 5,000 lockages.

The lowest number of lockages are in places where cruising potentials are more limited: land-cut sections of the Central/Western Erie Canal (Locks E-25 to E-35) and the narrow portion of the Mohawk River (E-14 to E-22).

As can be seen in Exhibits 4-20 and 4-21, most locks have significant unused capacity: over 70 percent at the peak hour in most cases. Even E-23, the busiest lock, has considerable capacity for increased utilization.

Types of Boating on the Canal

- *Local Privately Owned Boats:* Data from 1987 indicate that more than half of all NYS registered boats 16 feet or under (most likely to be trailered) were owned or operated by people living within 25 miles of the Barge Canal. The total number of such local privately owned boats along the Canal in 1992 was almost 113,000. The Marshall Macklin Monaghan study of the canal tourism market estimates that this number will increase to over 140,000 by the year 2000.

As shown in Exhibit 4-22, "Motorboat Registration 1992 - County of Use," boater registration is highest in the four metropolitan areas of Buffalo (Erie-Niagara Counties), Rochester (Monroe), Syracuse (Onondaga and Oswego) and the Capital District (Schenectady, Albany, Rensselaer and Saratoga). Not only do these areas have large populations, but each also has significant cruising opportunities on nearby rivers and lakes.

While the four major metropolitan areas each have high boater usage, there is relatively little canal boater traffic from one metropolitan area to another, and it is estimated that fewer than

thirty private boats per season make the complete loop of the western Erie.

- *Transient Boats:* Transient boats are those that originate outside the canal region and are passing through en route to more distant points. Many of these are being moved south for the winter; others are being taken on weekend trips or longer vacations through New York to Canada or the Great Lakes. Primary areas of origination are Long Island, New York City, Lake Ontario, Lake Erie, the Thousand Islands, and the St. Lawrence region. Secondary areas are Lakes Huron, Superior, and Michigan; Detroit River/Lake St. Clair/St. Clair River; and Georgian Bay, the Trent-Severn Waterway, Ottawa River/Rideau Canal and Lake of the Woods in Canada. Data indicate that about 15 percent of the slips in marinas along the Canal are reserved for transient use.
- *Excursion Boats:* Excursion boats offer day-trip itineraries. They do not have overnight accommodations and return home to port each night. Excursions range from one to twelve hours and are extremely popular, not only on the Canal but on waterways all over the world.

As part of the NYS Canal System Market Study, Marshall Macklin Monaghan surveyed seven of the nine operators presently offering boating to the public on the Canal. All offer excursions, mainly sightseeing trips including lunch or (more commonly) dinner. The largest excursion boat on the canals accommodates 100 persons. Excursion boats are up to 200 feet in length and often have two decks.

- *Tour Boats:* A tour boat is a vessel traveling for multiple days with or without overnight accommodations.
 - *Hotel Tour Boat:* Tour boats often function as hotels, with overnight accommodations for multiple-day trips. One such boat, the "Caribbean Prince," is now operating on the Canal, with a fall "See the Leaf Colors" trip from New York to Montreal. The operator is planning to expand its itinerary with a new boat constructed especially for the Canal, with

a retractable wheelhouse to clear canal bridges.

- *Non-Hotel Cruise Boat:* The "Emita II" and the "City of Syracuse" tour various segments of the Canal with on-board food service, but stop each night for landside bed and breakfast.

Large cruise boats usually require a full-year program to justify the initial investment and operating costs, and many travel to southern waters in the winter.

- *Charter Boats:* Charter boats (hire boats) are rented and skippered by the renter. The most common type on the Canal today is the "narrow boat," a re-creation of an English canal boat, which is used for trips ranging from one hour to one week. The boat is under 60 feet long and has accommodations for two to ten people, including a full galley and one or more bathrooms.

Mid-Lakes Navigation Company of Skaneateles is the largest hire-boat operator along the Canal, with ten narrow boats, including those built by Mid-Lakes and operated by Collar City Charters of Troy. More boats are planned each year.

The hire-boat season lasts for 22 to 24 weeks. Fifteen percent of the customers have no prior boating experience, but the slow speed, safe waters and simplicity of operating a boat on the Canal makes use by novices possible. Increasing bare-boat chartering is considered to be one of the most important opportunities in the effort to transform the Canal into a Recreationway. As vacationers, charter patrons typically stay a week or more on the Canal, patronizing local restaurants, marinas, and shops, and visiting local attractions. Importantly, they also provide local color by their own presence on the Canal, helping to popularize "Canaling" among all who see them.

- *Nonmotorized Boating:* Canoes, kayaks, small sailboats, windsurfers and rowboats are a growing segment of the canal boating market. Rowing as a sport is very popular, and regattas are held in several locations along the Canal.

Smaller boats are also available for rental along the Canal, including dinghy-like craft, and nonmotorized boats such as canoes and rowboats.

Canal Cruising Areas and Links

As is shown on Exhibit 4-23, "Canal Cruising Areas and Links," there are two types of boating areas on the Canal:

Cruising Areas are those locations where widewaters in lakes and rivers offer multiple boating opportunities. These occur in four places along the Canal:

1. The Western Cruising Area around Buffalo, where boating is available on the Niagara River and on Lake Erie.
2. The Central Cruising Area, around Syracuse, where boating is available on Onondaga and Oneida Lakes. Boaters can also access Seneca and Cayuga Lakes through the Cayuga-Seneca Canal and cruise from the Oswego Canal/River to Lake Ontario and Canada.
3. The Northern Cruising Area, at the northern end of the Champlain Canal, where boaters can access Lake Champlain and Canada.
4. The Eastern Cruising Area, where boaters can access both the widewaters of the Mohawk River and the Hudson River to New York City.

Canal Links are the relatively long stretches of canal between cruising areas, where there are no lakes and few widewaters. Canal links include the Western Erie Canal, the Eastern Mohawk River, and the Northern Champlain Canal. Boating on the canal links is restricted in speed, and by the low height of the bridges. Canal boating is best suited to smaller, slow-moving boats like charter boats, runabouts, nonmotorized boats, and tour and excursion boats, which can take advantage of the canal ports, scenery, and heritage sites to create a leisurely vacation experience.

The contrast between the types of more active boating available in the large lakes and widewaters of the cruising areas and the slower

boating available in canal links is further amplified by the dramatic differences between open landscape and urban settlements. This diversity contributes to the allure of the Canal as a destination for long-distance travel and boating vacations.

Facilities for Boaters

Existing boater facilities along the Canal include 107 marinas, 98 boat tie-ups, and 102 boat launches. The great majority of boater facilities are privately owned and maintained. Marinas are concentrated in the Erie - Niagara region, around Seneca, Cayuga and Oneida Lakes, and in the Capital District, as shown on Exhibit 4-24, "Existing Marinas."

The lack of boater facilities, particularly marinas, at locations that would encourage long-distance cruising is one of the most serious deficiencies of the Canal System today, and the one most directly responsible for inhibiting an increase in canal boating.

Seasonal High Water

The canal season is 30 weeks long, from the first week in May to the last week in November. The potential for spring flooding is an unpredictable factor, which in some years, particularly recently, has delayed canal opening. Delayed opening is not only an inconvenience to boaters, it can be a severely limiting factor to the financial success of tour- and charter-boat operations, which require at least a 20 to 22 week season to achieve profitability.

The canal areas most affected by spring flooding are the center of the Canal System and Erie Canal, the Mohawk River, and the Hudson River portion of the Champlain Canal.

Major flood-control projects are probably neither affordable nor consistent with the Canal's conservation goals. Some mitigation and a full understanding of these issues, however, are needed if recreational boating and commercial shipping are to thrive.

4.9 LANDSIDE RECREATION

Existing Landside Recreation Facilities

There are three types of recreational facilities along the canal corridor: regional parks, local parks, and existing segments of the Canalway Trail, as shown on Exhibit 4-25, "Regional and Local Recreation Facilities" and Exhibit 4-26, "Existing Canalway Trail."

Regional and Local Parks

Regional parks are large in scale, and designed to serve the recreation needs of a regional population. Activities tend to be less organized and more passive than local park activities, and include picnicking, walking, camping, fishing, hunting, swimming, visits to historic sites, theater, concerts, and performing arts. Users of regional parks generally include day users who live within two hours of the facility, and out-of-town visitors who are in the region on vacation.

Local parks outnumber regional parks two to one, and generally include those facilities designed to serve small-scale local recreational needs, such as baseball, football and soccer fields, basketball and tennis courts, and tot lots. Local recreation facilities are frequently sited adjacent to the Canal, taking advantage of the visual and physical amenities it offers. The typical user of a local park will arrive via foot, bike, or automobile (less than a thirty-minute drive).

The distribution of local and regional parks along the Canal System is not geographically uniform. With two exceptions, recreational facilities immediately adjacent to the Canal are concentrated near the population centers of Tonawanda/Amherst, Lockport, Rochester, Newark, Seneca Falls, Geneva, Syracuse, Fulton, Oswego, Rome, Utica, Little Falls, Amsterdam, and Schenectady. The two exceptions to this distribution pattern are the extensive water-oriented facilities and natural areas along Oneida Lake, and the Montezuma area, where federal and state wildlife areas along a twenty-mile section of

canal create the largest protected natural area in the Canal System.

The following describes existing canal-oriented regional and local parks, by region.

Erie - Niagara Region

The Erie - Niagara Canal area has relatively few regional recreational facilities: one state park and two county parks. There is, however, an abundance of regional recreational opportunities along the Niagara River and on Lake Ontario. In addition, the Canal System is an important resource for local recreation purposes. With 22 municipal parks along 37 miles of canal, this region has the highest concentration of local recreational facilities along the Canal.

Genesee - Finger Lakes Region

Most of the regional recreation facilities in the Genesee - Finger Lakes Region are located east of Rochester, many focusing on the natural areas around Montezuma. There are fifteen state parks and thirteen county parks in this canal region. There is also an abundance of local parks: 49 within 100 miles of canal.

Eastern and Central Southern Tier

Dominated by Cayuga and Seneca Lakes, recreational opportunities in this region focus on water and boating. This region has three state parks, no county parks and thirteen local parks.

Central New York

Perhaps the most recreationally diverse region along the Canal, Central New York Region has 24 state parks and seven county parks. The facilities range from the popular boating centers of Oneida Lake to the wilds of the Montezuma National Wildlife Refuge and the State Wildlife Areas, which together represent 90 percent of all the designated natural areas along the Canal System. The region also includes a portion of the Old Erie Canal State Park, an important component in the historic experience offered to canal visitors. There are 24 state parks, seven county parks and 52 local parks in the Central New York Region.

Herkimer - Oneida - Montgomery

While the number of recreation facilities in the Mohawk Valley is comparable to that of Central New York, the types of facilities are quite different. With fewer natural areas, much of the recreational focus of this region is on historic sites and structures. The region contains 26 state parks/historic sites, no county parks, and 22 local parks.

Capital District

This region has over 4,000 acres of Urban Cultural Parks, representing 87 percent of the total UCP acreage in the entire Canal System. This is the most urban region of the canal study area, and its ten state-owned parks are primarily oriented towards cultural and historic resources. Water access and boat-launch facilities are also abundant. There are 26 local parks along the 68 miles of canal in this region.

Lake Champlain - Lake George

With only two state-owned parks, no county parks and nine local parks, the Champlain Canal represents an overlooked recreational resource. It is presumed that recreational facilities on Lake George, in the Adirondack Mountains, and on Lake Champlain have drawn attention away from the Canal.

Canal Trails

One of the goals of the Canal Recreationway Plan is to create a continuous "end-to-end" public trail along the Canal. As is shown in Exhibit 4-26, "Existing Canalway Trail," canal trails now exist in major portions of the system. Existing trails accommodate one or more of the following uses: bicycling, walking, nature hiking, day hiking, backpacking, horseback riding, jogging, in-line skating, cross-country skiing, and snowmobiling. In many cases, the canal trails pass through or are included in local and regional parks, thereby expanding the activities occurring along the trail.

The most significant missing link in the end-to-end trail is east and west of Syracuse from Lyons to Rome, a distance of 65 miles, where the present Canal traverses private land, rivers,

wetlands and, importantly, the Montezuma Refuge and associated State Wildlife Areas.

The following describes missing trail links and connecting possibilities with other trails, by region.

- *Erie - Niagara Region:* There are two extensive gaps in the end-to-end trail in this region: between NYS Route 270 and the River Walk Trail in Tonawanda, and between Tonawanda Creek and Lockport. Once the end-to-end trail is complete there will be connections with the Seaway Trail, a road-oriented bicycle route; the Buffalo Riverwalk; and the Conservation Trail south of Middleport.
- *Genesee - Finger Lakes Region:* The end-to-end trail is nearly complete in this region, with only two small segments missing: a ten-mile stretch between the Village of Clyde and the Montezuma National Wildlife Refuge; and a ten-mile segment between Seneca Falls and Geneva. The only other major trail system that connects with the Canal System in this region is the Genesee Valley Greenway.
- *Eastern and Central Southern Tier:* No trail systems follow the shoreline of Seneca or Cayuga Lake; the Finger Lakes Trail abuts the southern tip of Seneca Lake for a short distance.
- *Central New York:* The greatest obstacles to completing the end-to-end trail are in the Central Region. Constraints include significant wetlands, steep slopes and private land ownership. The only existing trail, in the Old Erie Canal State Park, is significantly to the south of the present Canal. The North Country Trail joins the Old Erie Canal Trail just east of the village of Canastota.
- *Herkimer - Oneida - Montgomery:* A significant gap exists in the end-to-end trail in this region between the terminus of the Old Erie Canal State Park, west of Rome, and Fort Hunter.
- *Capital District:* The east-west section of the end-to-end trail is almost complete in this region, although a segment remains to be completed. Along the Champlain Canal,

portions of the trail have been sited, but no continuous right-of-way exists between Waterford and Fort Edward. No intersections with other major trail systems currently exist.

- *Lake Champlain - Lake George*: No major trail systems exist along the Champlain Canal. A section of trail along the Feeder Canal in Glens Falls is complete. This trail provides a valuable link between the canal trail and the proposed Warren County trail system.

The most significant constraint to establishment of a complete end-to-end trail is land ownership. In canal sections constructed as the Barge Canal, canal ownership frequently ends at the canal bank. Along the Old Canal, particularly in urban areas, the state often sold the canal towpath for development when it was no longer needed. A major constraint in the 20-mile section of the Barge Canal which crosses the Montezuma wetland is that significant public trail usage is precluded by the requirements of wildlife management.

An additional potential constraint is residential opposition to recreationway trails. General public acceptance of recreationways and their value has been growing, however, and good public-relations campaigns and trail planning can mitigate opposition.

Several important resources are available for trail development. The first is utilization of abandoned railroad rights-of-way and abandoned sections of old canals. The most outstanding example is the Old Erie Canal State Park, which offers a rewatered canal and an existing trail through historic canal villages.

Additional resources include the NYS Department of Transportation's Bikeway 5 and Bikeway 9 programs. Bikeway 5 defines a trail along the Erie Canal corridor, using existing roads. Primarily following NYS Route 5, the route provides an alternative where the canal trail has not yet been established. Bikeway 9 is a proposal to site a trail along the Champlain Canal using Routes 4 and 22.

To be viable as an end-to-end trail, the canal trail will require a network of facilities to serve its users: rest rooms, water, information, accommodations, supplies, etc. The lack of existing facilities and their irregular distribution is a constraint which, if it remains uncorrected, will seriously hinder the ability of the trail to accommodate long-distance hikers and bikers.

4.10 THE CANAL AND ECONOMIC DEVELOPMENT

A series of economic and market factors in the 25-county canal area indicate support for greater utilization of a revitalized Canal. Overall, these factors are positive and support a general determination of significant market potential for development of canal-oriented and canal-based uses. The specific market factors in the economic development analysis follow.

Demographic Trends

Reversing 1980-1990 trends, population in the canal regions is exhibiting healthy growth. Overall, it is expected to grow from 1990 to 1998 by over 180,000 people. As is shown in Table 4-2, "Projected Population Growth, 1990-1998, by Canal Regions," growth is expected to vary substantially from region to region. The highest percentage of growth is expected in the Eastern and Central Southern Tier and the Lake Champlain - Lake George regions: 9.6 percent and 8.8 percent, respectively.

Predicted growth rates in the canal regions are considerably higher than those for New York State as a whole: projected 1998 canal-region population is 21.9 percent of total state population, but accounts for 35.6 percent of expected population growth, as is shown in Table 4-3, "Projected Population Growth, 1990-1998, Canal Regions and New York State."

Table 4-2
Projected Population Growth, 1990-1998, by Canal Regions

Region	PROJECTED POPULATION INCREASE 1990-1998	
	Total	% Over 1990
1. Erie - Niagara	26,035	2.2
2. Genesee - Finger Lakes	58,106	5.8
3. Eastern and Central Southern Tier	10,815	9.6
4. Central New York	10,358	5.6
5. Herkimer - Oneida - Montgomery	8,084	2.2
6. Capital District	48,454	6.2
7. Lake Champlain - Lake George	21,286	8.8
Total	<u>183,138</u>	

Source: U.S. Bureau of the Census; National Planning Data Corporation; Arthur Andersen

Table 4-3
Projected Population Growth, 1990-1998, Canal Regions and New York State

Total NY State population, 1990	18,505,218
Projected growth to 1998	514,762
Total canal region population, 1990	4,055,188
Projected growth to 1998	183,138
<ul style="list-style-type: none"> Projected 1998 canal region population is 21.9% of New York State population. Growth in canal regions is projected to be 35.6% of total state population growth. 	

Source: Arthur Andersen

Other key demographic data exhibit similar trends, especially new household growth, median household-income growth, and average household expenditures, particularly for lodging away from home, food away from home, and other entertainment services and equipment.

As shown in Table 4-4, "Projected Income, Recreation and Tourism Expenditures: Canal Regions, 1993-1998," median household income and household expenditures for recreation and tourism in the seven canal regions compare favorably with New York State and the country as a whole. In addition, New York State exceeds the

national median in per capita income, median household income, and household recreation and tourism expenditures. In general, these trends support a finding of a market base for tourism and tourist-related expenditures.

Table 4-4
Projected Income, Recreation and Tourism Expenditures: Canal Regions, 1993-1998

Area	Estimated Per Capita Income, 1993	% Change Per Capita Income, 1998	Estimated Median Household Income		Household Recreation & Tourist Expenditures	
			1993	% Change 1993-1998	1993	% Change 1993-1998
U.S.	\$16,870	21.66	\$33,290	14.22	\$3,411	7.94
NYS	\$19,931	27.10	\$38,125	18.54	\$3,690	9.51
Eric - Niagara	\$15,048	17.84	\$30,947	10.79	\$3,166	6.66
Genesee - Finger Lakes	\$15,338	19.92	\$34,039	14.09	\$3,331	8.53
Eastern and Central						
Southern Tier	\$14,075	21.75	\$30,257	15.99	\$3,174	9.17
Central New York	\$14,782	21.38	\$33,019	14.92	\$3,300	8.85
Herkimer - Oneida - Montgomery	\$13,267	19.37	\$27,487	12.85	\$2,938	8.10
Capital District	\$18,395	25.49	\$38,414	18.73	\$3,602	10.44
Lake Champlain - Lake George	\$14,805	25.57	\$31,719	18.03	\$3,210	10.34

Source: U.S. Bureau of Census; National Planning Data Corporation; Arthur Andersen

Tourism

The New York State tourist market is large, diverse and increasing. For the twelve-month period ending February 1994, travel trips to New York State totaled 108 million. Excluding New York City visitation, 60 million trips were for leisure purposes, accounting for \$9.2 billion in annual tourist expenditures. The untapped state tourism market presents significant opportunities for the Canal System. The current data for canal regions, although incomplete, present a picture that can be described as follows:

- Tourism is substantial in some areas and limited in others.
- Current canal visitor expenditures come primarily from within the seven canal regions, with only a small percentage from other parts of the state, the Northeast, or the nation.
- New York State has the fourth largest share (4.2%) of total leisure travel in the United States. Tourism measured by person-trips in New York State for the period March 1993 to February 1994 was up 3 percent over the same period the previous year.

Image

The image of the Canal is an important qualitative factor in the market potential. The Canal suffers not so much from a poor image, but rather from an absence of image. The analysis shows that most of the potential market – local, regional and national – is unaware that the Canal still exists and is operative. To the extent that this Canal is identified, the image is a positive one. Image enhancement will result in realizing far greater market potential from all sources.

Supply

The economic development component of the Canal Recreationway Plan assumes that demand sources exist and have not, as yet, been captured. The supply of specific facilities necessary to meet anticipated demand (boating, recreation, tourism from local, regional, national and international markets) is very limited, with the exception of motels and inns, which are located in principal areas along the Canal and which will benefit from increased tourism and recreational use. The limitations are most evident in the following facilities:

- Full-service marinas and related facilities such as boat-related shopping, comfort/shower stations, and food services.
- Retail services related to canal use. These include food, shops/restaurants, boat repair, equipment/materials, clothing and general merchandise shops which would be required by tourists, cruise boats, tour boats, and recreational users.

End-to-end canalside surveys documented only limited supply of these services. Supply that can be supported entirely by increased canal usage, however, will be minimal, which means that new supply will require development of market support from surrounding communities. Existing supply will be enhanced, e.g., greater occupancy rates for canalside inns and hotels, and may be expected to expand, e.g., canalside retail shops and restaurants.

4.11 COMMERCIAL SHIPPING

Historic Trends

The modernization of the Old Erie Canal system and terminals to the modern Barge Canal was completed in 1918 at a cost of \$170 million. Traffic grew rapidly for the first twenty years from a base of nearly 1.5 million tons in 1920 to 4.6 million tons in 1940. Utilization plummeted during World War II to 3 million tons, and the impact of the war appears to have occurred at a particularly untimely and sensitive period in the commercial development of the Canal.

Traffic recovered for a brief period in the early 1950s, and peak usage for the modern system of 5.2 million tons was reached in 1951. At no time, however, did the modern canal reach the historic high utilization of the Old Erie Canal, which, for several years during the decade between 1870 and 1880, exceeded 6 million tons.

Commercial usage began to decline in the late 1950s, reaching a stable level in the early 1960s. Beginning in the mid-1960s, however, traffic

again began the gradual decline that has continued without any upward correction to its current level.

Intense competition from the railroads was the first major factor that impacted commercial shipments. In the post-war period, the interstate highway system and the high-speed semi-trailer introduced another competitive element. The opening of the St. Lawrence Seaway, with its ability to accommodate large ocean-going bulk-cargo carriers, was another factor contributing to the loss of canal traffic. More recently, the movement of petroleum products on the system has been virtually eliminated by the combined competitive pressures of the expanded interstate pipeline system, the multi-car tank train and the 7,500-gallon tanker truck.

The effects of these developments were accelerated by the increasing cost of environmental regulation, especially to the oil companies and the tug and barge operators. Environmental contamination in certain areas has also impaired the Canal Corporation's ability to conduct its dredging program in a timely and efficient manner and has increased the cost of dredging.

Current Commercial Traffic Trends

Exhibit 4-27, "Commercial Shipping Trends and Tonnage," illustrates the decline in commercial shipping on the Canal since the peak year of 1951.

Since 1980, most of the commercial traffic on the system has been on the Champlain Canal, and the bulk of the commercial product on the Champlain was petroleum products. The closing of the Plattsburgh Air Force Base was another major negative factor reducing the movement of petroleum products. As a result, this traffic fell from 224,746 tons in 1989 to 57,178 tons in 1993. With the end of operations at Plattsburgh Air Force Base, 1994 saw the last of scheduled petroleum barge operations on the Champlain Canal.

Other than petroleum products, cement, calcium chloride and calcium liquid have made up the bulk of the other products shipped on the Canal over the last five years. Virtually all these commodities have been shipped through the Oswego Canal and account for up to 97 percent of all non-petroleum products shipped on the Canal during the years 1989 to 1993. The year 1994 also saw the last regularly scheduled movement of cement on the system, when the historic canal motor ship, the "Day Peckinpaugh," ceased operations.

The balance of commercial products are predominantly construction machinery and material. Small amounts of scrap iron, cast concrete and an occasional large generator or turbine have moved on the system in recent years, but not in sufficient amounts to indicate any clear trend.

With the exception of a shipment of molasses in 1991, no food or agricultural products have been moved on the Canal in recent years. Even though the waterway passes through one of the major dairy and agricultural areas of the U.S., there does not appear to be any obvious market segment for shipping products from this region by water. The time-sensitive nature of most of these products, a significant requirement for refrigeration, and the labor costs involved in necessary transshipments between the various transportation modes make it highly unlikely that this market could be cost-competitive.

Commercial Shipping and Recreational Boating

There is general agreement that commercial shipping and recreational boating use of the Canal are completely compatible, with minimal negative effects on each other. In fact, it is widely believed that increased commercial traffic would enhance recreational boaters' and landside spectators' experience and enjoyment of the Canal. The commercial vessels are interesting to watch and serve as a reminder of the Canal's historic role and commercial traditions that were the rationale for the original development of the system.

The Barge Canal System was designed to handle 10 million tons annually. At its peak use, the system never carried more than 5.2 million tons. Since the commercial use of the system is now less than 100,000 tons, any projected commercial use in the foreseeable future would have minimal impact on recreational use of the system.

Commercial vessels, including commercial passenger vessels, will continue to have priority of use over pleasure craft while "locking through" the system. While this may occasionally delay some pleasure craft for brief periods at a few high-use locks, it is not deemed a significant factor impacting system utilization by either user group.

Operational and Economic Factors

The Canal System serves as the key link in the major waterway system that connects the great port of New York/New Jersey and the Hudson River with the Atlantic Ocean and the Great Lakes. This has been the historic function of the system and, in the early days of the modern Barge Canal, there were canal terminals and facilities in New York City, along the Hudson, and on the Great Lakes.

The principal constraints on the economic viability of the present system are the size of the locks, the depth of water and low speed limits in the channel, and the "air draft" or height between the water and bridges over the channel. Other factors include a lack of modern intermodal facilities, a limited shipping season of six to seven months and a lack of investment in modern vessel technology that could optimize the use of the system by creating larger economies of scale.

Competitive technological advances in the rail and trucking industries and the labor cost in handling material between the different transportation modes have rendered the Canal uncompetitive for most commodities. Nevertheless, a recent survey of more than 2,000 companies in the state identified 84 companies that were interested in utilizing the Canal System if it were economically competitive. Fifteen products and commodities were identified for possible shipment on the

Canal, most of which have been transported historically on the Canal.

Maintaining the Channel

The unequivocal assurance of water depth to the designated standards across the system is a key requirement for the viability of the Canal for commercial operations, both freight and passenger. Commercial operators have consistently maintained that uncertainties over channel depth must be eliminated as a primary operational concern. This is especially true in today's highly competitive transportation environment where the difference between 9 feet and 12 feet can be the difference between profit or loss. During the 1993 season, there were 14 vessel groundings on the system, including commercial tugs, barges and several large recreational vessels.

The Canal Corporation has identified approximately 150 sites systemwide that require dredging. The total dredging requirement is estimated at 4 million cubic yards, 140,000 cubic yards of which contain low-level PCB contamination. Fourteen of the PCB sites are along the Champlain Canal. There is no comprehensive cost estimate for the dredging program currently available, but the Corporation believes that by focusing initially on the Waterford - Three Rivers - Oswego segment of the Canal, it can maintain the most economically viable section of the waterway to the published depth.

Perhaps the most intractable problem in dredging is the disposal of PCB-contaminated sediments and the treatment of dredge-water return on the Champlain Canal. Despite extensive site testing and promising developments in sediment and water-cleaning technologies, no action has yet been agreed upon between the Canal Corporation, the Environmental Protection Agency, the Department of Environmental Conservation and the Army Corps of Engineers as to how these dredging sites can be cleaned. There is also a lack of upland disposal sites for uncontaminated dredge material. Wet dumping at canalside

locations, a frequently used option in the past, is being phased out by the regulatory agencies.

A commitment to a systematic and long-term dredging effort is the key challenge for the long-term viability of the Canal System impacting on both commercial and recreational users. The dredging program will clearly require the continued expenditure of substantial funds. It will also require a dedicated spirit of commitment and cooperation among the four agencies that have to agree on its implementation.

4.12 ADIRONDACK PARK

The Adirondack Park, roughly six million acres in size, is the largest park in the contiguous 48 states, larger than its neighboring State of Vermont. Exceptional among state and national parks, it is composed of both public and private land. Private holdings comprise about 55 percent of the land within the Park boundaries, including villages, hamlets, large estates, timber and paper company holdings, and other individual properties. Not least among the Adirondack Park's extraordinary features is that some 45 percent of the Park is composed of state-owned Forest Preserve which is a designated National Landmark and is protected by the New York State Constitution as "forever wild."

Canal Reservoirs in the Park

A series of canal reservoirs and feeder streams is located in the southwest corner of the Park, in Herkimer and Hamilton Counties (see Exhibit 4-28, "Adirondack Park Boundary and Reservoirs"). Approximately 25 by 30 miles in size, this watershed lies on tributaries of the Black River, West Canada Creek and East Canada Creek. It includes a number of canal-regulated structures, streams and reservoirs, the largest of which is Hinckley Reservoir (7,542 acres).

Canal reservoirs are bodies of water whose depth, surface, and volume are controlled so as to provide a regulating supply of water to the Canal System. The reservoirs, the underwater land associated with them and certain shorelands

around the reservoirs are considered "canal-owned land" or "canal properties." The streams that feed the reservoirs and/or carry the water to the Canal System may or may not be "canal-owned."

Some, but not all, of the canal reservoirs lie wholly or partly within areas classified as private land in the Adirondack Park Land Use and Development Plan. In those areas, regulations of the Adirondack Park restricting land use will apply. Reservoirs in this category include the Hinckley, North Lake, Woodhull, Sand Lake, and Canachagala Reservoirs. On the other hand, several reservoirs (such as Twin Lakes and most of South Lake) and substantial reaches of the tributary streams (not necessarily in canal ownership), lie entirely within the state-owned Forest Preserve land which is classified in the Adirondack Park State Land Master Plan as Wild Forest, with streams feeding those reservoirs penetrating upstream into areas designated as Wilderness. (Wilderness is the most restrictive land-use category, restricting permanent structures to visitor registration structures and Adirondack lean-tos, and allowing no public use of motor vehicles. Wild Forest encourages additional recreation use and permits motor vehicles on existing public roads, but is almost as restrictive as the Wilderness category regarding structures.) Both Wilderness and Wild Forest areas are subject to the "forever-wild" clause of the State Constitution, meaning that they cannot be leased, sold or exchanged, and must be kept forever as wild forest land.

Land Use

Any use of land or water associated with the canal regulating system is affected by the current laws governing the Park. Regarding land ownership, the Thruway Authority and Canal Corporation have commissioned a survey to determine the boundaries of canal-owned land in the Adirondacks as required by law. Once the survey is completed, analysis will be undertaken to determine the utilization of properties under temporary permit, and the potential for transfer to the NYS Department of Environmental Conservation of any lands surplus to the needs of

the Canal. The survey is under way, and is to be completed in 1995.

4.13 MARKETING THE EXISTING CANAL SYSTEM

To begin the work of promoting the existing Canal System, the Canal Corporation conducted a preliminary analysis of the existing tourism and recreational market situation of the Canal System and began implementation of a marketing/public relations program to promote the Canal System as a travel/tourism destination and recreational resource.

Canal-System Tourism and Recreational-Market Study

A preliminary tourism and recreation market study of the Canal System was conducted for the Canal Corporation by Marshall Macklin Monaghan in 1993. The study was intended to provide a basis for short-term marketing activities initiated by the Canal Corporation, and provide preliminary direction for longer-term marketing and research.

The market study indicated that boater-use of the Canal System has increased significantly in the past decade, but there is potential to attract more boaters – particularly from the Great Lakes region (especially Ontario and Quebec) and, to a more limited extent, the metropolitan New York/Long Island region. It also identified a critical need to provide more information about navigation and the availability of boater support services along the system. The market study identified a growing interest in tour and hire boats and strong growth potential in this market.

The study identified an urgent need for consistent and accurate research data about Canal System users and visitors. Data are needed to more accurately define the numbers of boats actually using the system (since traditionally activity along the Canal System was measured by number of times locks were operated, not number of vessels locking through a specific lock) and to learn more about the characteristics of boater use of the system. (The Canal Corporation subsequently

adjusted the manner in which these data were gathered and revised the survey distributed to boaters in order to gather more specific information about their use and interests.) Little information exists, or is gathered, about landside visitors to the Canal System.

The study indicated that "the landside market potential is far bigger than the water-based markets in terms of potential visitor and user numbers" and that "large numbers of people will never set foot on a boat" although "many more are not boaters but will take advantage of cruises, tour and charter boats." The most immediate need of landside visitors indicated in the study is to "provide improved access, both physically and visually."

The study also found that while the number and type of attractions, events, support services and other resources along the Canal System has increased over recent years, these resources "are diverse and dispersed, and there is no coherent marketing of these assets." While the NYS Department of Economic Development is responsible for promotion of tourism in New York State, and designated tourism promotion agencies (TPAs) in the vacation regions and counties along the Canal System are responsible for coordination and implementation of local tourism-promotion efforts, the study found that the TPAs in the five regions and 25 counties that the canals traverse are "too dispersed and represent too great a range of interest and capability to provide an efficient and coordinated marketing campaign for the Canals as a system."

The study indicated that the Canal System "is a unique resource which requires a coordinated and effective statewide promotion, and this can best be provided by a single entity." The study recommended that the Thruway Authority (Canal Corporation) assume responsibility for coordinating industry marketing efforts and helping establish a strong image for the Canal System in the travel marketplace. It also stated that there is a need for significant expansion of existing tourism and recreational "products" offered by the Canal System, and development of new tourism and recreational products in order to fully capitalize on existing market opportunities.

The study identified three primary market opportunities: boating markets, tourism markets and other special interest markets.

Boating markets were discussed in four primary component segments, categorized by nature of use:

- local boaters
- transient boaters
- excursions and cruises
- other boaters (i.e., rentals/charters; non-motorized, etc.)

Tourism markets were segmented by touring method:

- automobile touring
- motorcoach/group touring.

Other special interest markets were segmented by recreational activity:

- fishing
- bicycling
- hiking/walking
- camping (individually and via recreational vehicles)
- snowmobiling
- ice skating
- cross-country skiing
- relaxing in parks
- visiting historic/cultural sites
- participating in educational programs.

The study prioritized these market opportunities in a list of target markets, based on a preliminary assessment of their size and expenditures, and a comparison with other canal systems:

- 1a. Transient boating
- 1b. Touring by land
2. Local boaters
3. Other boaters
4. Special-interest markets
5. Local/regional recreationalists.

The study recommended a marketing strategy characterized by strong leadership and coordination by the Canal Corporation, and identified specific promotional activities that were undertaken in 1993 and 1994; these are reviewed

in the section that follows. The marketing strategy also recommended that, in addition to undertaking specific promotional activities, the Canal Corporation should facilitate tourism and recreational-industry efforts, and develop marketing relationships with key partners having common interests – within New York State, the U.S. and in Canada – in order to maximize resources, impact and, ultimately, economic benefits to the Canal System and Corridor.

Initial Promotional Efforts

Initial efforts to promote the Canal System as a travel/tourism destination and recreational resource were undertaken by the Canal Corporation in 1993 and 1994, prior to the development of the Canal Recreationway Plan. To assist with this effort, the Canal Corporation retained Burson-Marsteller, a worldwide marketing/public relations firm.

A preliminary review of the Canal System vacation-product offerings reinforced the potential of travel to the canal corridor for vacations for a wide range of visitors and local residents, whether they arrive by car, boat, bike or on foot. Informal research with selected influential travel/tourism media indicated little knowledge of, yet strong interest in, the Canal System, and a need for more system information.

The strategic direction of the initial promotional efforts encompassed both an initial assessment of the factors influencing U.S. leisure travelers' vacation decisions, and the attributes of the Canal System. It focused on the geographic target markets identified by the NYS Department of Economic Development for the I♥NY tourism promotion campaign – primarily New England and Mid-Atlantic states and the Canada provinces of Ontario and Quebec. Demographic markets were families, baby boomers and seniors; recreational-activity markets included boaters, outdoor enthusiasts and history/culture seekers.

The initial strategy to market the Canal System focused on creating a clear, unified image for the Canal System as a destination and promoting that image through a new series of communications

tools. These tools packaged existing attractions and events along the Canal System and within the adjacent corridor and presented them collectively as part of a larger Canal System "product." The strategy leveraged the highly successful I♥NY tourism-promotion campaign by building on existing awareness of the five New York State vacation regions intersected by the Canal System, and created awareness of the entire Canal System by reinforcing recognition of the well-known, historic Erie Canal and linking it with its lesser-known "sister" canals – the Champlain, Oswego and Cayuga-Seneca – under a single thematic umbrella.

Initial tactics emphasized the use of publicity, along with very targeted advertising, promotion and direct-marketing support. Media in key geographic markets were used as conduits for conveying three key Canal System messages:

- the New York State Canal System exists;
- it is accessible; and
- it offers variety in vacation and recreational experiences.

New publications were developed, including a general lure brochure, the *Canaler* newsletter, a calendar of events, and a tour/rental-boat brochure. Flyers were inserted in monthly registration renewal mailings to New York State boat owners; advertising with response coupons was placed in selected magazines and newspapers; and a new toll-free 800 number was established to provide live operator response to inquiries. A video promoting the Canal System was produced and supplied to selected information centers along the Canal System and in promotional outlets. Canal Corporation personnel used these materials to promote the Canal System at numerous consumer boat shows and outdoor expositions across New York State and in Canada.

Promotional support was provided to canal festivals in Waterford and Seneca Falls, respectively, to celebrate the opening of the navigation season in 1993 and 1994.

The Canal System was introduced to travel media through promotional events in New York City

and familiarization trips on the Canal System for selected travel journalists. The Canal System was promoted at travel-trade shows for the motorcoach industry in New York State and Canada.

Publicity efforts in the first year (1993-94) resulted in coverage of the Canal System's attractions as travel destinations in the amount equivalent to over \$600,000 in paid advertising (four times the budget devoted to media outreach and two and a half times the total public-relations budget for the year) yielding audience impressions of more than 25 million. Calls to the 800 telephone number increased substantially over previous years, and over 130,000 lure brochures were distributed.

Publicity efforts in the second year (1994-95) yielded approximately 43 million audience impressions, with an advertising equivalency of \$750,000 (twelve times the program investment for 1994 media outreach and 2.3 times the total public-relations budget). Calls to the 800 number continued to increase and over 140,000 lure brochures were distributed.

In 1994, a program to provide \$100,000 in matching funds to designated regional and county tourism promotion agencies in the canal corridor was introduced. The intent of the program is to provide support for local efforts to promote tourism and recreation along the Canal System. It encourages development of specific promotional materials emphasizing the system and identifying local tourism and recreational amenities and facilities.

These efforts to market the Canal System continue, and recommendations for further marketing efforts in conjunction with implementation of the Canal Recreationway Plan are discussed in detail in Chapter 10: "Interpreting and Marketing the Canal."

4.14 SUMMARY - OPPORTUNITIES AND CONSTRAINTS

The study of existing conditions reveals excellent opportunities for transforming this historic commercial canal into a new Canal Recreationway. Although an array of constraints

must be overcome, they do not appear insurmountable.

The following tables summarize the opportunities and constraints for development of the Recreationway.

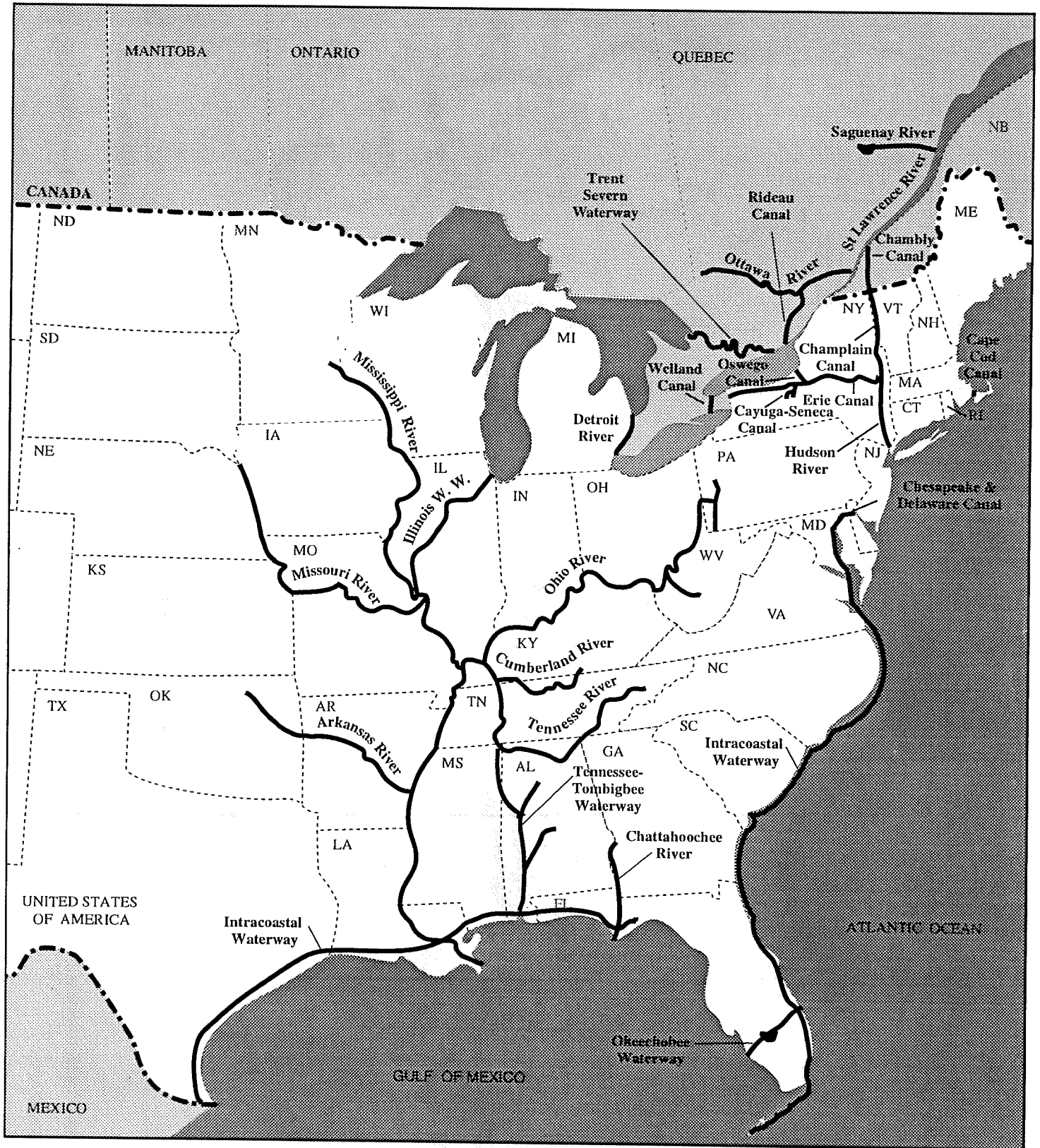
Land Use	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Variety of existing land-use and landscape characteristics adds diversity and interest to canal experience. • Significant open spaces between communities illuminate the beauty of the natural setting. • Broad body of existing laws and policies available to implement the Recreationway Plan. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Contrary to the goal of fostering cluster development, natural areas between canal communities may be attractive for real-estate development. • Extensive intergovernmental and citizen cooperation and effort needed to establish a strong comprehensive land-use regulatory program.
Conservation and Ecology	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Significant undeveloped natural areas of great beauty. • Varied habitat, including wetlands, marshes, meadows, and forested areas. • Diverse topography, climate, flora and fauna. • Extensive protected conservation areas, including the Montezuma wetlands complex. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Private land ownership and conflicting land uses create gaps in the natural greenway and associated habitat. • Water drawdown adversely affects habitat conditions. • Agricultural runoff and unstable banks adversely affect water quality. • Summer dredging produces adverse biological impacts.
Canal Lands and Infrastructure	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Completely functioning system under unified management. • Good condition of most canal structures. • Dedicated operations and maintenance staff. • Significant inventory of canal-owned land available for more intensive use. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • High canal-infrastructure capital-improvement costs. • Cooperative efforts necessary with regulatory bodies and other jurisdictional agencies. • The dredging necessary to maintain water depth is constrained in some areas by environmental problems. • Hydropower impacts on canal flow and wildlife. • Annual permit system requires overhaul to allow long-term leasing of canal-owned lands. • Canal-lands leasing potentials constrained by lack of infrastructure such as water, sewer or utilities, pre-existing uses, and hydrological conditions.

Water Management	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Ample water volume for all anticipated uses. • Significant water-storage capacity. • Extensive hydropower capacity. • Relatively clean water in most sections. • Productive fisheries. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Complexity of the system's hydrology and large size of the canal watershed. • Potential and actual conflicts among various water uses: water supply, power generation, and recreation. • Multiple and uncoordinated agency jurisdictions. • Water pollution in certain segments, e.g., PCB contamination in the Champlain Canal. • Municipal budgetary restrictions limit improvements to wastewater-treatment facilities. • Potential public reluctance to accept zoning and other land-use restrictions necessary for watershed protection.
Transportation	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Excellent highway, air and rail access. • Link between DOT Scenic Byways and Canal scenic roads. • Potential links with Thruway and Northway. • Rail and bus excursions. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Limited information currently available on intermodal connections to Canal. • Additional rail stops difficult for Amtrak to implement. • Coordination necessary to implement intermodal links. • Local directional signage poor. • Local canal-access points limited and poorly identified.
Historic Preservation & Cultural Resources	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Historic significance of the Canal to New York State and the nation. • Extensive inventory of historic and cultural resources. • Many sites in protected areas. • Numerous public and private groups engaged in canal-related interpretation and preservation projects. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Many historic features not identified or protected. • No unifying preservation program. • No coordinated canal interpretation program. • Limited promotion and marketing.
Recreational Boating	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Large and diverse Canal System provides many and varied boating opportunities. • System is located near large transient boat markets on Lake Ontario, Lake Erie, Lake Champlain, and Canadian canals, with potential for circular routes. • Modern canal and locks. • Significant boater registration in canal regions. • Capacity available for significant additional boat traffic. • Significant potential for major charter and tour-boat activity. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Limited and irregular boating services and facilities available. • High capital-improvement and maintenance costs of canal facilities. • Lack of public access to the Canal in some areas. • Limited boater access from the Canal to key tourist attractions. • Significant capital investment required to establish charter and tour-boating system. • Navigational aids need upgrading and expansion. • Additional boating regulations and enforcement required.

Landside Recreation	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Significant portions of an end-to-end canal trail exist. • Many local and regional canalside parks and recreation facilities. • Many public and private groups working on trail development and canal recreation projects. • Potential for trail development along abandoned railroad rights-of-way and sections of old canals. • Winter use of canal and trails for hiking, skating, cross-country skiing, and/or snowmobiling. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Limited and irregular trail services and facilities available. • Private land ownership along the banks of the Canal creates gaps in greenway and trail. • Trail use may conflict with wildlife management requirements in protected conservation areas. • Potential conflicts between trail uses and adjacent private-land uses. • Potential conflicts between motorized and non-motorized trail users, as well as between hunters and hikers/bikers.
Economic Development	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Historic significance of the canals and beauty of the canal setting enhance economic development potential. • Proximity of the Canal to significant population centers and markets. • Population growth in canal regions and favorable trends in income and expenditure. • Large size of NYS and NYC tourist markets with potential capture rate for use of enhanced canal facilities and services. • Excellent access via air, automobile, bus and rail. • Revenue-generating potential of canal-lands leasing. • Revenue-generating potential of hydropower expansion. • Strong local interest in future development along Canal. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Lack of support facilities for boaters and trail users. • Lack of traveler signage to and information about the Canal. • Lack of canal-based restaurants, retail stores, etc. • Lack of marketing. • Seasonal nature of canal operation and attractions. • Potential conflicts between hydropower and aquatic ecosystems. • Depressed economic climate in some canal sub-regions.
Commercial Shipping	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Potential creation of intermodal transfer facilities. • Shipping potentials among canalside locations. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Limited shipping season. • Toxic and hazardous wastes in the Canal constrain dredging, as does lack of spoils-disposal sites. • Cost and time differentials favorable to other shipping modes. • Intermodal transfer necessary to reach most destinations. • Low bridge clearances limit barge size and containerization potentials.

Adirondack Park	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • Uniqueness of the vast Adirondack lake and forest realm creates an additional recreational/tourist alternative for canal visitors. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • Fragile Adirondack wilderness environment and habitat severely limits potential uses. • Preservation of water-regulating capability of canal reservoirs required. • Potential use and ownership conflicts adjacent to canal reservoirs: canal ownership survey in process. Resolution of various state interests in property pending survey.
Marketing the Canal	
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> • The system is located within easy reach of large, transient boater markets on Lake Ontario and Lake Erie, offers "circle" routes for boaters. • Interest in cruising, outdoor recreation, adventure and history tourism are all growing strongly. • Significant, widely-known existing tourism destinations are accessible from the Canal System, including three of the four most popular destination regions in New York State – Niagara Falls, the Adirondacks (Lake Champlain) and the Finger Lakes, as well as Lake Ontario and Montreal. • Travel media and travel agents are eager for new features/products which the Canal System offers. • New-product development and coordinated marketing of existing product can help attract expanded tourism and recreational markets to the Canal System. 	<p><i>Constraints</i></p> <ul style="list-style-type: none"> • There is little awareness of the Canal System outside the immediate corridor. • There is virtually no accurate, detailed research available on existing use of the canals and surrounding attractions by either boaters or landside visitors. • There is little coordinated marketing of existing resources along the canals, and there is little continuity or consistency among existing canal-related events, festivals, tours, excursions and attractions. • There are few commissionable water-based, local travel/tourism products and no systemwide products or services commissionable to travel agents, so there are no strong vehicles by which to promote the Canal System to the 25,000+ U.S. travel agents and encourage their recommendation of the Canal System as a vacation option to the thousands of individuals whose leisure-travel-purchase decisions they influence. • Important potential transient-boating markets in Canada and Long Island have some perceptions of security/safety problems along the Canal System or concerns about availability of services. • The tourism and recreational infrastructure is not fully or evenly developed along the Canal System. • There is little information available to assist potential boating users or landside visitors in planning their travel or locating services, accommodations and attractions along the canal corridor once under way, and landside and waterside signage – information, directional and interpretive – is minimal to nonexistent. • The imposition of tolls has caused some water-based local user groups and individuals to curtail use of the Canal System or avoid using it at all.

NEW YORK STATE CANAL RECREATIONWAY PLAN

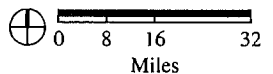
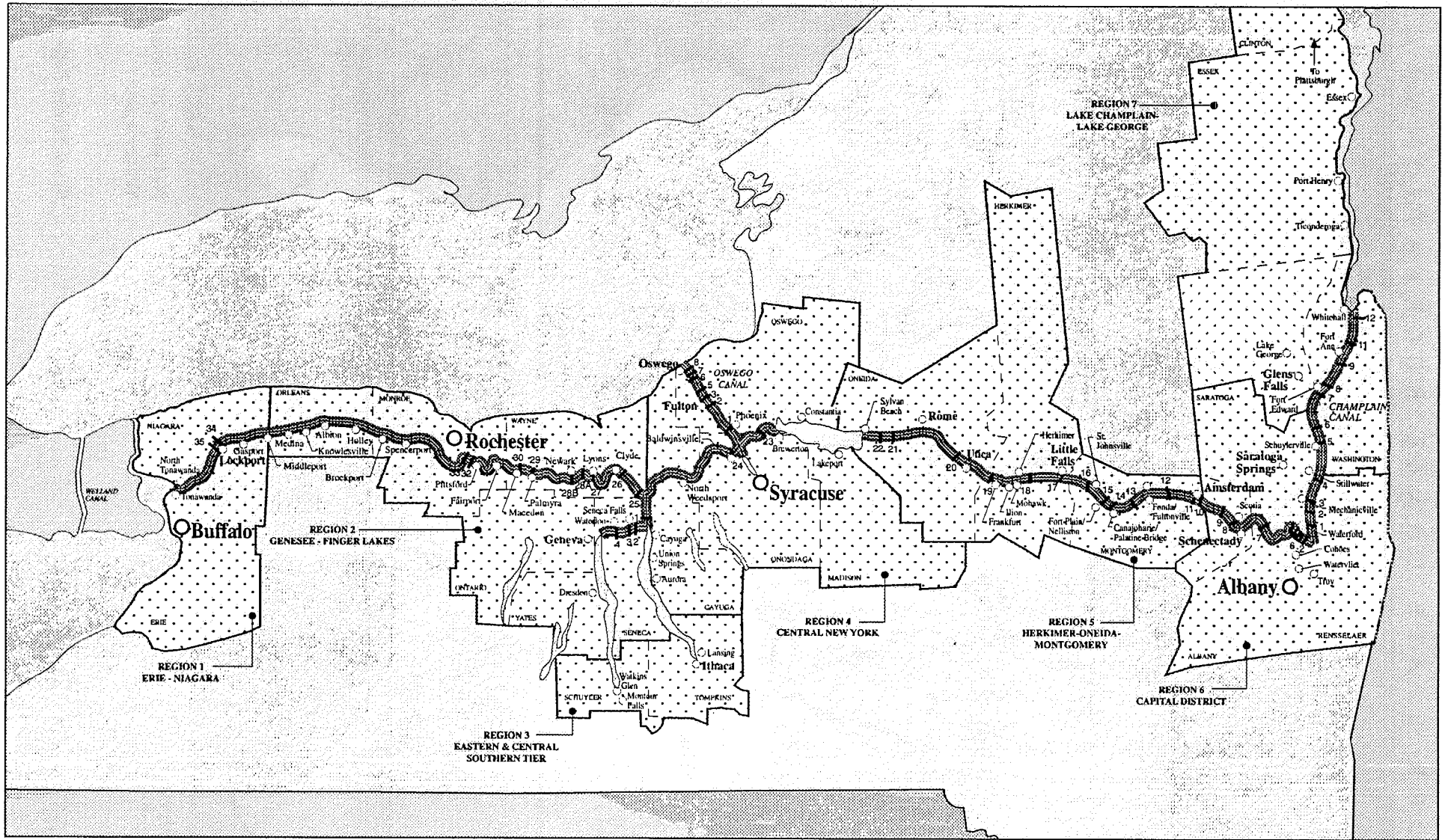





Network of Connecting Waterways


Beyer Blinder Belle Consortium

Exhibit 4-1

NEW YORK STATE CANAL RECREATIONWAY PLAN



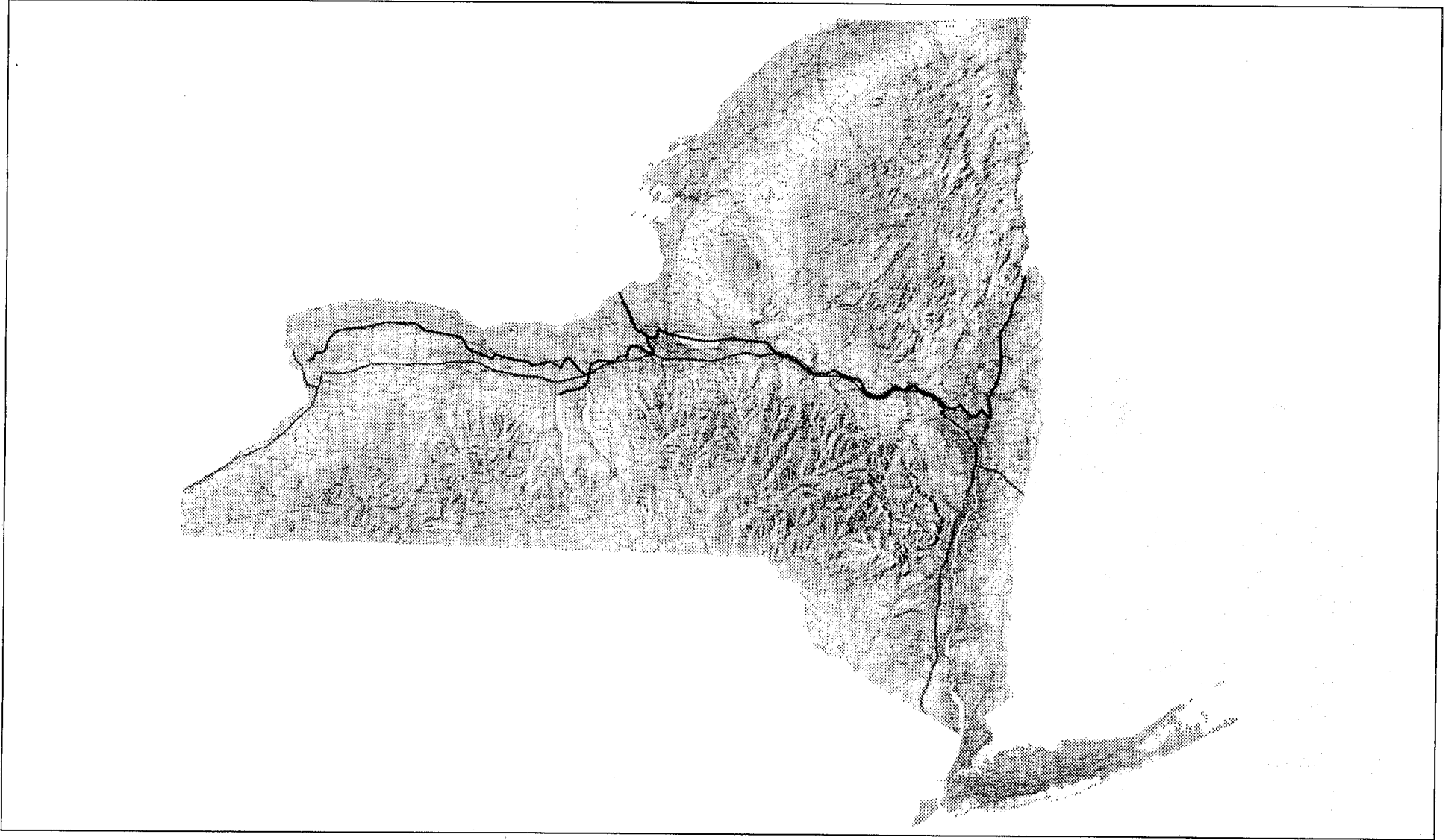
-  Primary- Canal-owned land
-  Canal waterway
-  Secondary- Cities, villages & towns contiguous with the Canal

 Tertiary- 25 counties

Canal Study Areas

Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN



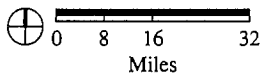
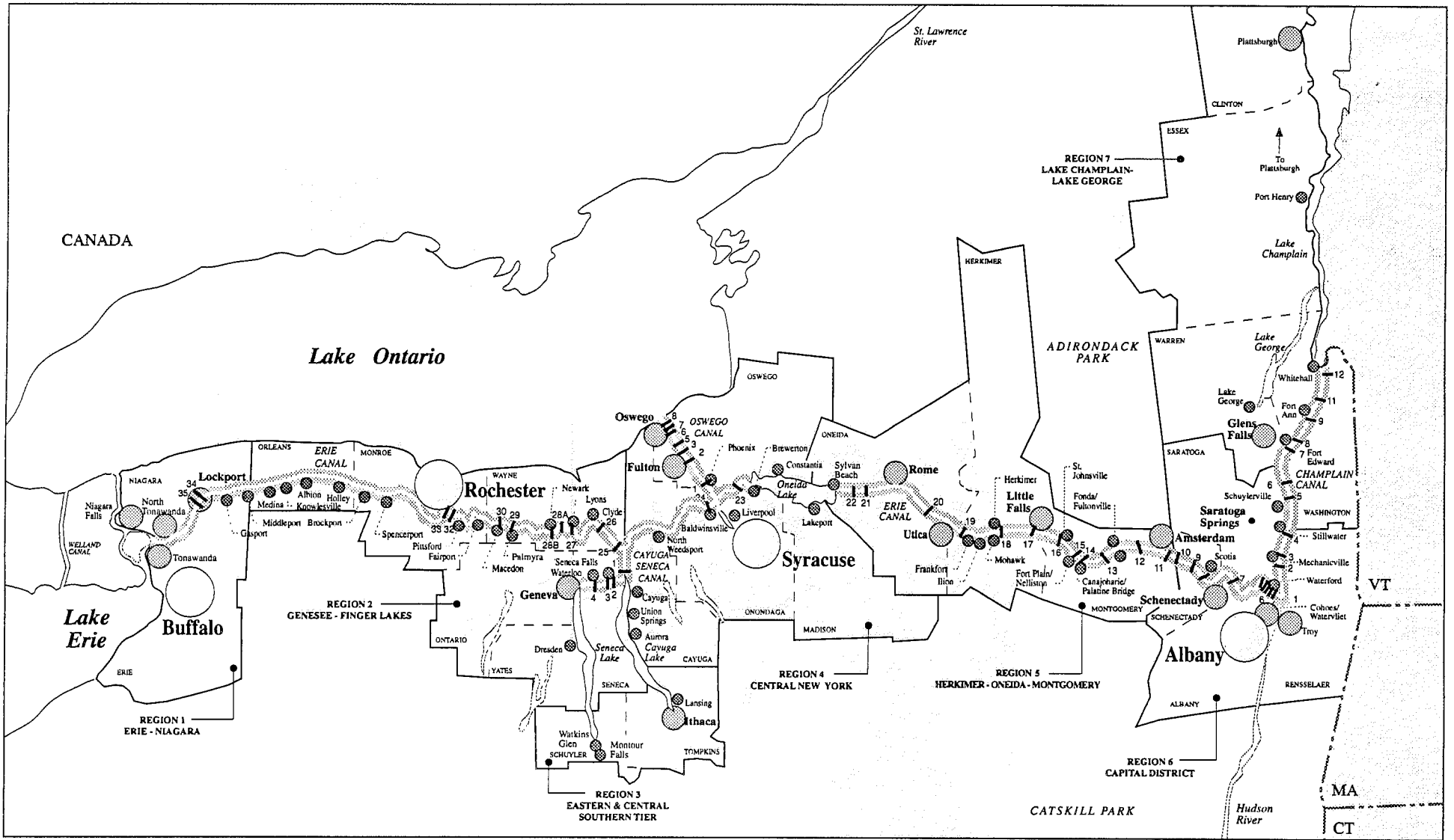
- NYS Canal System
- NYS Thruway System

New York State Topography

Beyer Blinder Belle Consortium

Exhibit 4-3

NEW YORK STATE CANAL RECREATIONWAY PLAN



- NYS Canal System
- Lock number
- Canal greenway
- Canal waterway

- Major city
- Small city
- Village

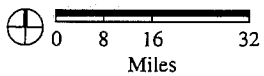
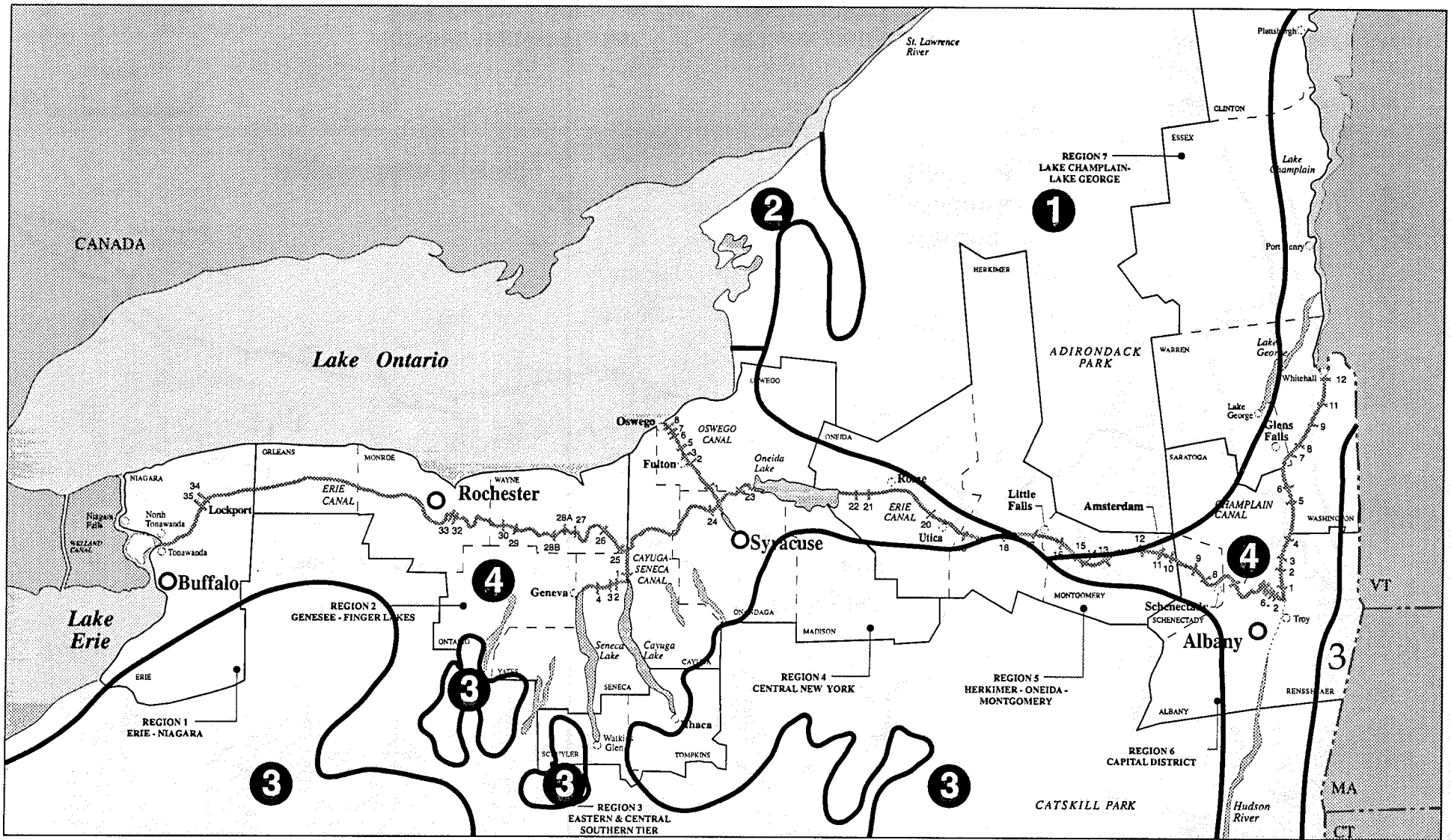
- County boundary
- Planning region boundary

Necklace of Towns

Bever Blinder Belle Consortium

Exhibit 4-4

NEW YORK STATE CANAL RECREATIONWAY PLAN



- NYS Canal System
- Lock number
- Planning region boundary
- County boundary

- 1** Extremely cold snowy winters
Very cool wet summers
- 2** Very cold winters
Cool sunny summers
- 3** Cold snowy winters
Cool wet summers

- 4** Cold snowy winters
Warm dry summers

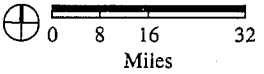
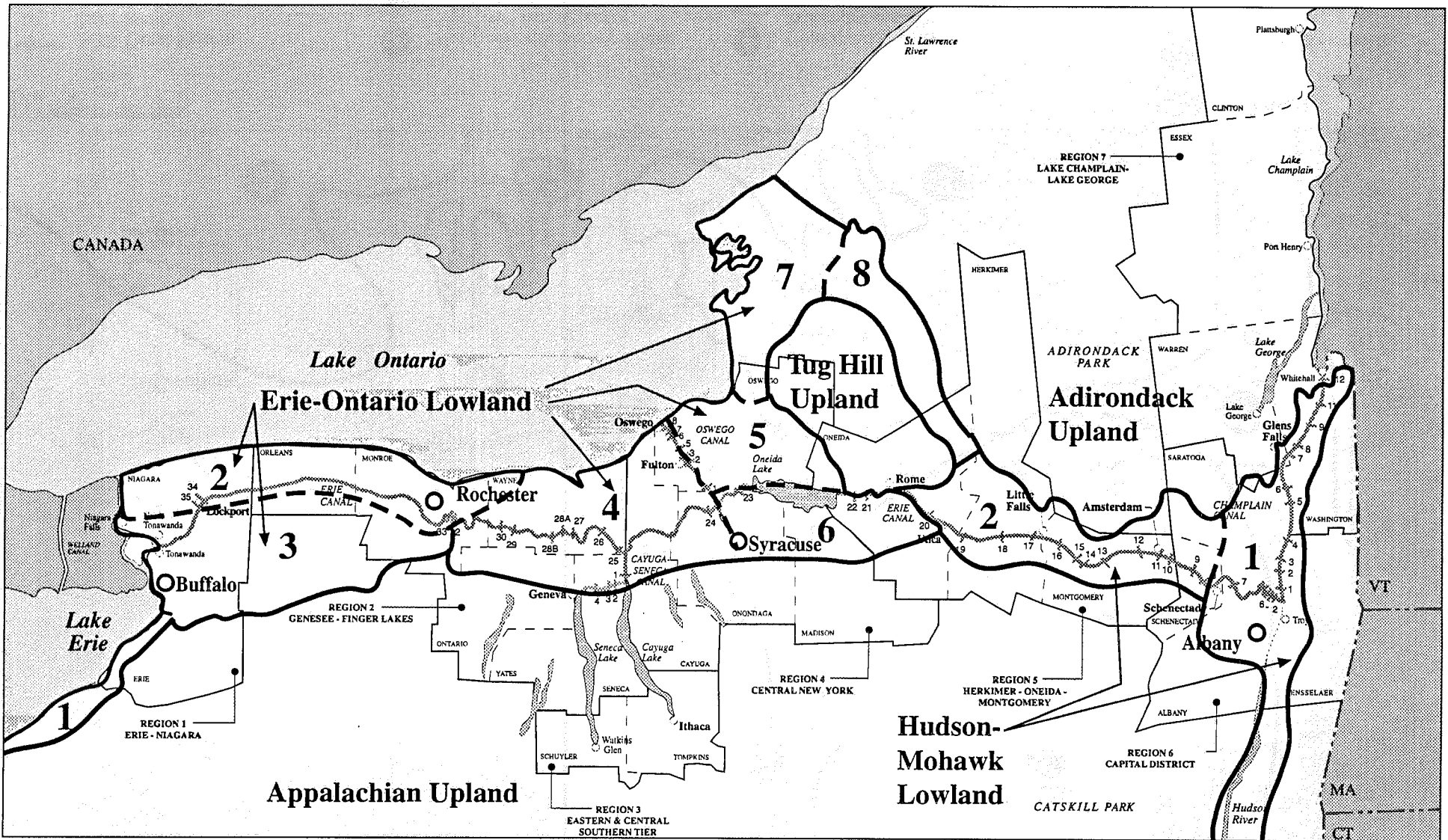
Source: C. Lovett Smith (1985), "The Inland Fishes of NY State," Dept. of Environmental Conservation

Climatic Zones

Beyer Blinder Belle Consortium

Exhibit 4-5

NEW YORK STATE CANAL RECREATIONWAY PLAN



- NYS Canal System
- Lock number
- Planning region boundary
- County boundary

ERIE-ONTARIO LOWLAND
 1. Erie Lake Plain; 2. Ontario Lake Plain;
 3. Southern Ontario Plain; 4. Ontario
 Drumlins; 5. Ontario Ridge & Swampland;
 6. Oneida Lake Plain; 7. Eastern Ontario
 Hills; 8. Black River Valley

HUDSON-MOHAWK LOWLAND
 1. Hudson Valley; 2. Mohawk Valley

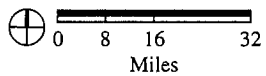
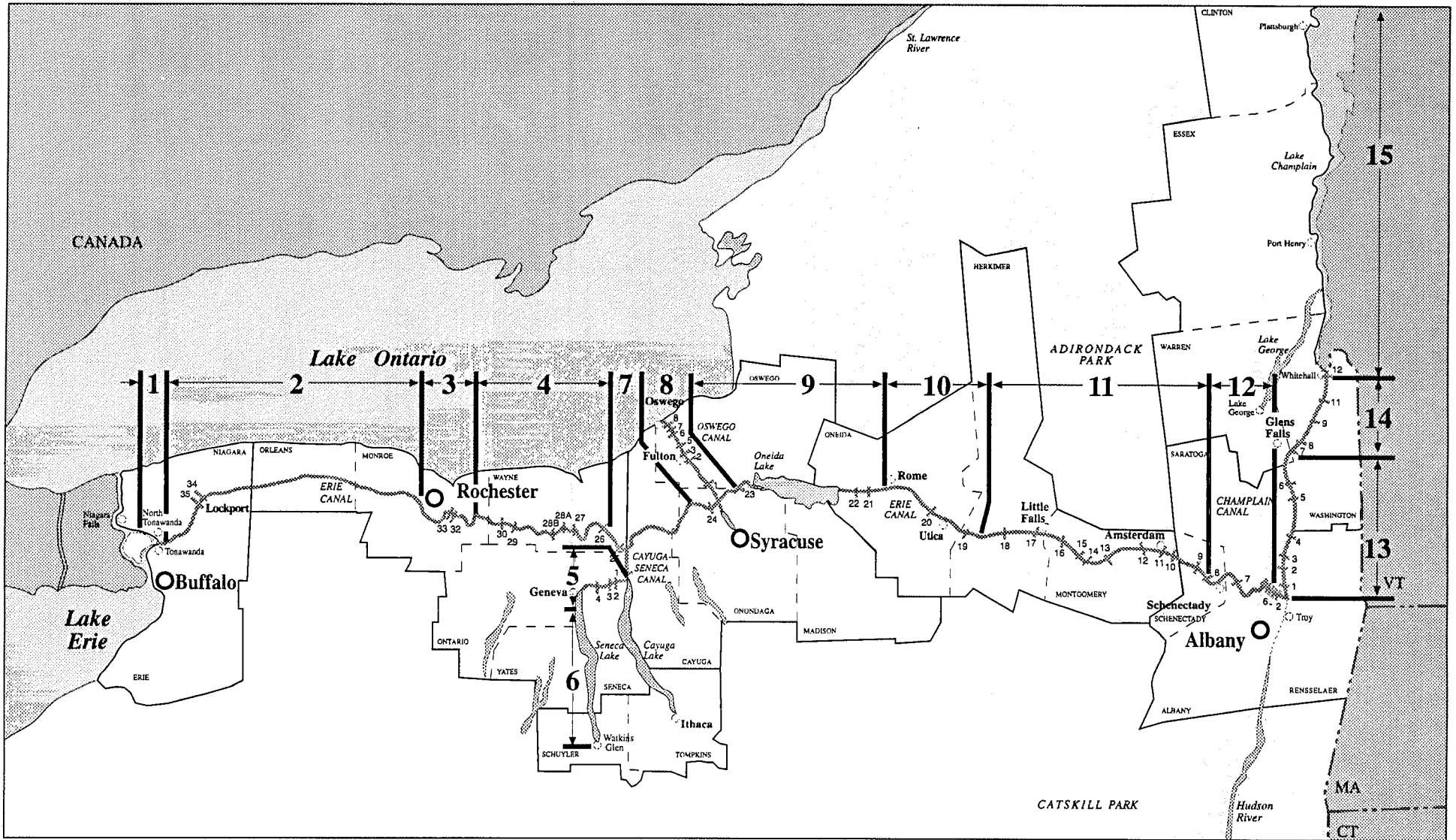
Source: C. Lovett Smith (1985), "The Inland Fishes
 of NY State," Dept. of Environmental Conservation

Landforms in New York

Beyer Blinder Belle Consortium

Exhibit 4-6

NEW YORK STATE CANAL RECREATIONWAY PLAN



- NYS Canal System Lock number
- Planning region boundary
- County boundary

- | | |
|--------------------------------------|-------------------------------|
| 1. Niagara Frontier | 9. Oneida Lake Recreation |
| 2. Ontario Lake Plain | 10. Upper Mohawk Valley |
| 3. Metropolitan Rochester | 11. Lower Mohawk Valley |
| 4. The Drumlins | 12. Eastern Gateway |
| 5. Cayuga-Seneca Canal | 13. Upper Hudson River Valley |
| 6. The Finger Lakes | 14. Champlain Canal |
| 7. Fish & Wildlife Conservation Area | 15. Lake Champlain |
| 8. Gateway to the Great Lakes | |

Thematic Canal Regions Locations

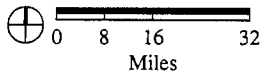
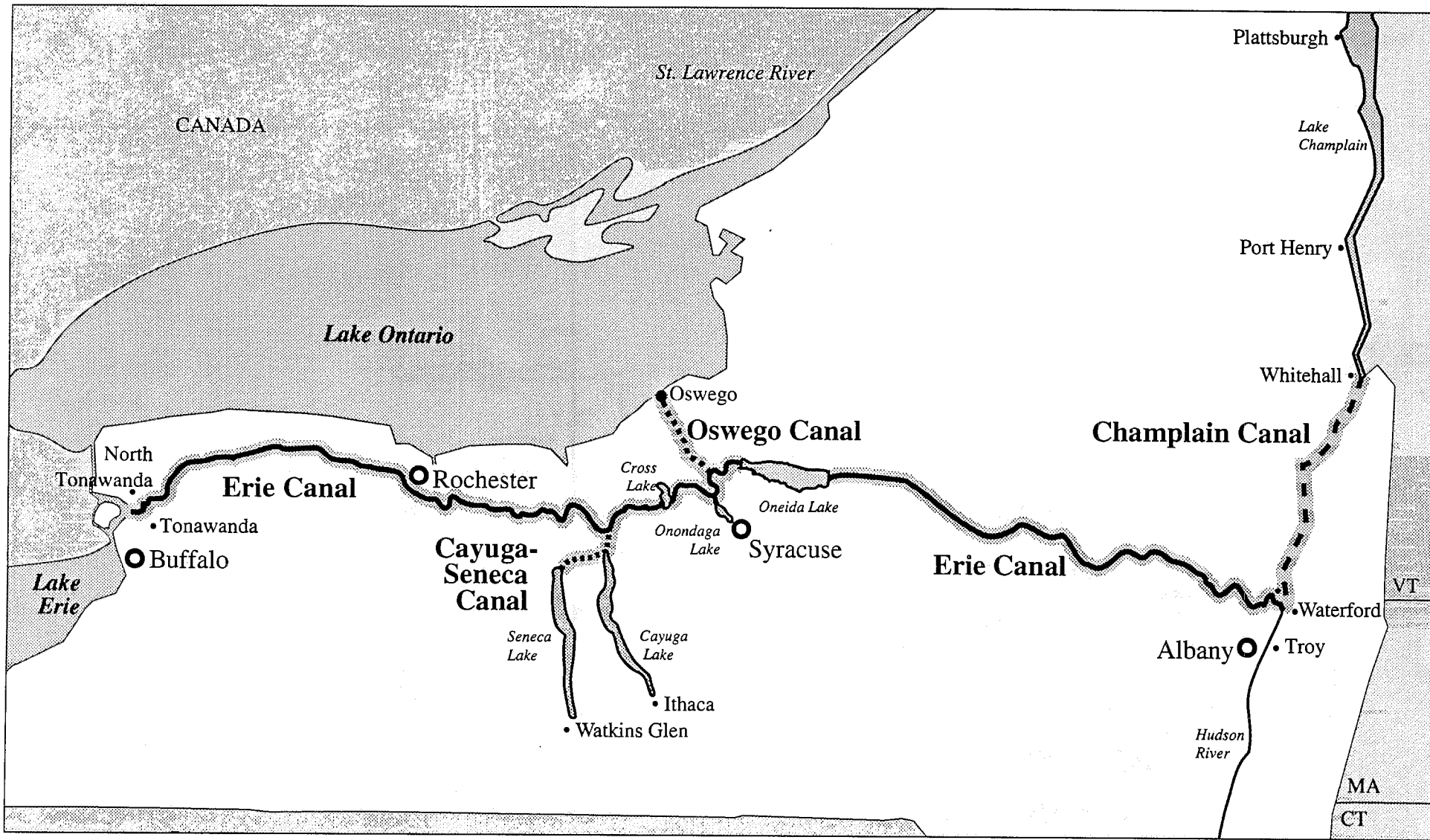
Beyer Blinder Belle Consortium

Exhibit 4-7

**Exhibit 4-8
Canal Thematic Region Characteristics**

Segment	Predominant Land Use	Canal Character	Land Form	Characteristic Landscape	Settlement Patterns	Interpretive Theme
1. Niagara Frontier	Community	Old Canal widened; dug section	Plain	Urban/Suburban	Major city	Commerce and industry, emigration, natural environment
2. Ontario Lake Plain	Farming	Old Canal widened; elevated dug section	Plain with Niagara Escarpment	Open farmland; long views.	Villages, small city (Lockport)	Natural environment, canal infrastructure
3. Metropolitan Rochester	Community	1918 alignment; Old Canal in city	Rolling	Urban/Suburban	Major city	Commerce and industry, hydropower
4. The Drumlins	Farming/Woodland	Old Canal widened; dug section (1918 alignment east of Lyons accessible by boat)	Drumlins	Open/Wooded	Villages	Natural history, history of canals, canal towns and villages
5. Cayuga-Seneca Canal	Community	1918 alignment in river valley	Drumlins	Urban/Suburban	Villages, small city (Geneva)	Women's movement, canal infrastructure
6. Finger Lakes	Farms/Woodland	Open water	Appalachian Upland/Lakes	Wooded/Lake Edges	Villages, small city (Ithaca)	Recreation, viticulture, natural environment
7. Fish and Wildlife Conservation Area	Wetlands/Open Space	1918 alignment thru Seneca River accessible by boat only in Oswego River Valley	Wetland	Wetland	Open space	Natural environment, bioecology
8. Gateway to Great Lakes (Syracuse)	Community	1918 alignment next to Old Canal	River valley	Wooded Valley Urban/Suburban	Major city Villages	Water transportation, recreation, military history
9. Oneida Lake Recreation	Wetlands/Woodland	1918 alignment thru lake - boat only	Plain/Lake	Wooded/Wetlands Lake Edges	Villages	Recreation, history of canals
10. Upper Mohawk Valley	Wooded/Wetlands	1918 alignment next to Old Canal in Mohawk River	River valley (wide)	Wooded	Villages Small cities (Rome, Utica)	Transportation networks, history of canals, canal infrastructure
11. Lower Mohawk Valley	Wooded	1918 alignment next to Old Canal in Mohawk River	River valley (narrow)	Wooded	Villages Small cities (Little Falls, Amsterdam)	Military history, geography, transportation networks
12. Eastern Gateway	Community	1918 alignment in Mohawk River to Waterford Flight	River valley (Hudson and Mohawk)	Urban/Suburban, Wooded	Major city (Albany); Small cities (Schenectady, Troy, Cohoes/Watervliet)	Commerce and industry, natural environment, canal infrastructure, hydropower
13. Hudson River Valley	Farms/Woodland	1918 alignment next to Old Canal in Hudson River	River valley (Hudson)	Wooded/Farmland	Villages	Military history, Native Americans
14. Champlain Canal	Farms	1918 alignment next to Old Canal in dug section	Broad valley	Farmland/Wooded	Villages	History of canals, military history, natural environment
15. Lake Champlain	Woodland/Farms	Lake	Adirondack Upland (Lake)	Woodland/Farmland	Villages	Transportation linkages, recreation

NEW YORK STATE CANAL RECREATIONWAY PLAN

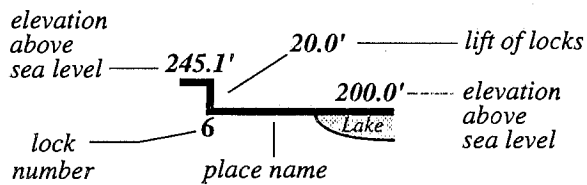
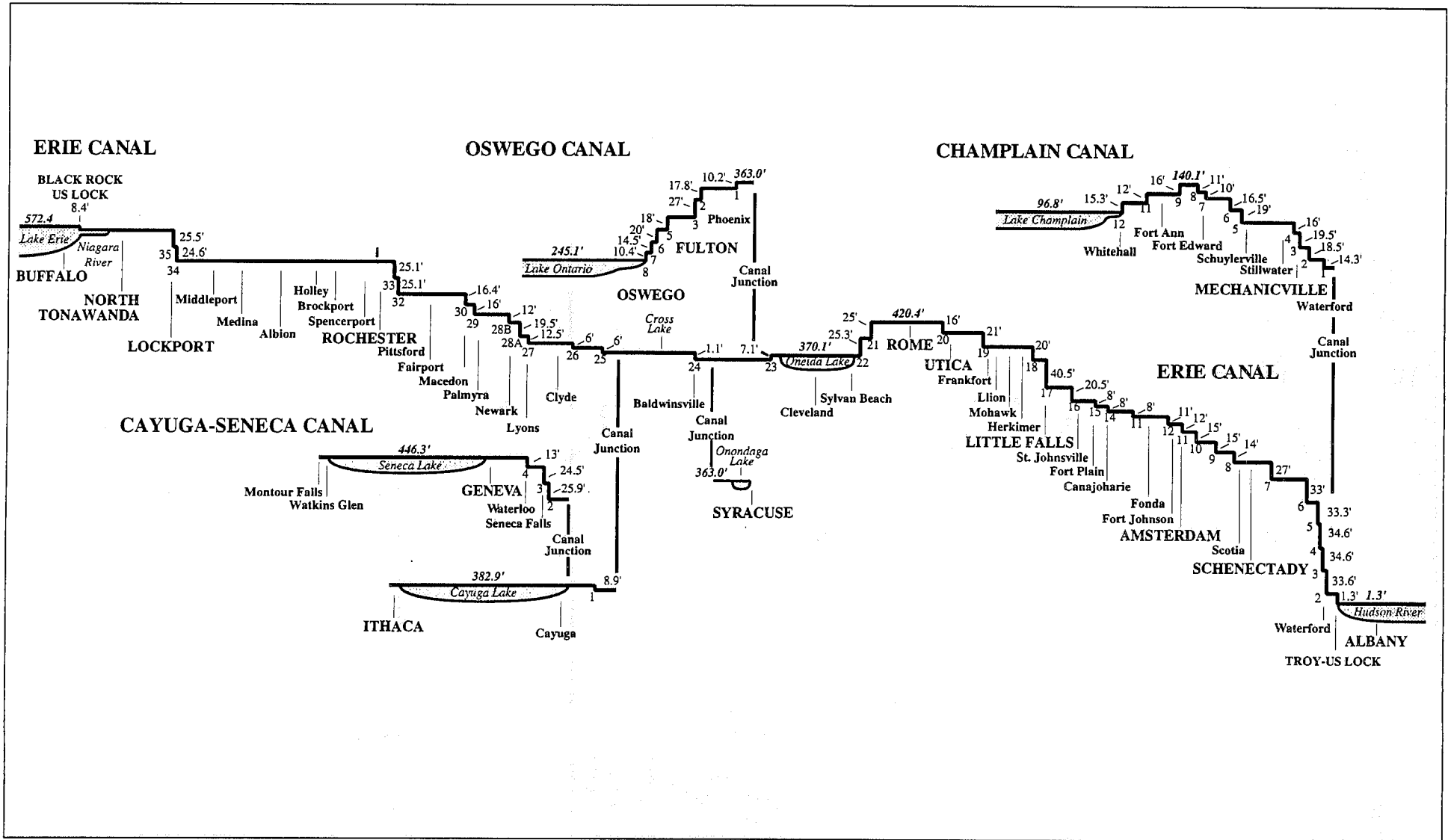


-  Erie Canal
-  Oswego Canal
-  Cayuga-Seneca Canal
-  Champlain Canal

NYS Canal System

Beyer Blinder Belle Consortium

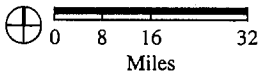
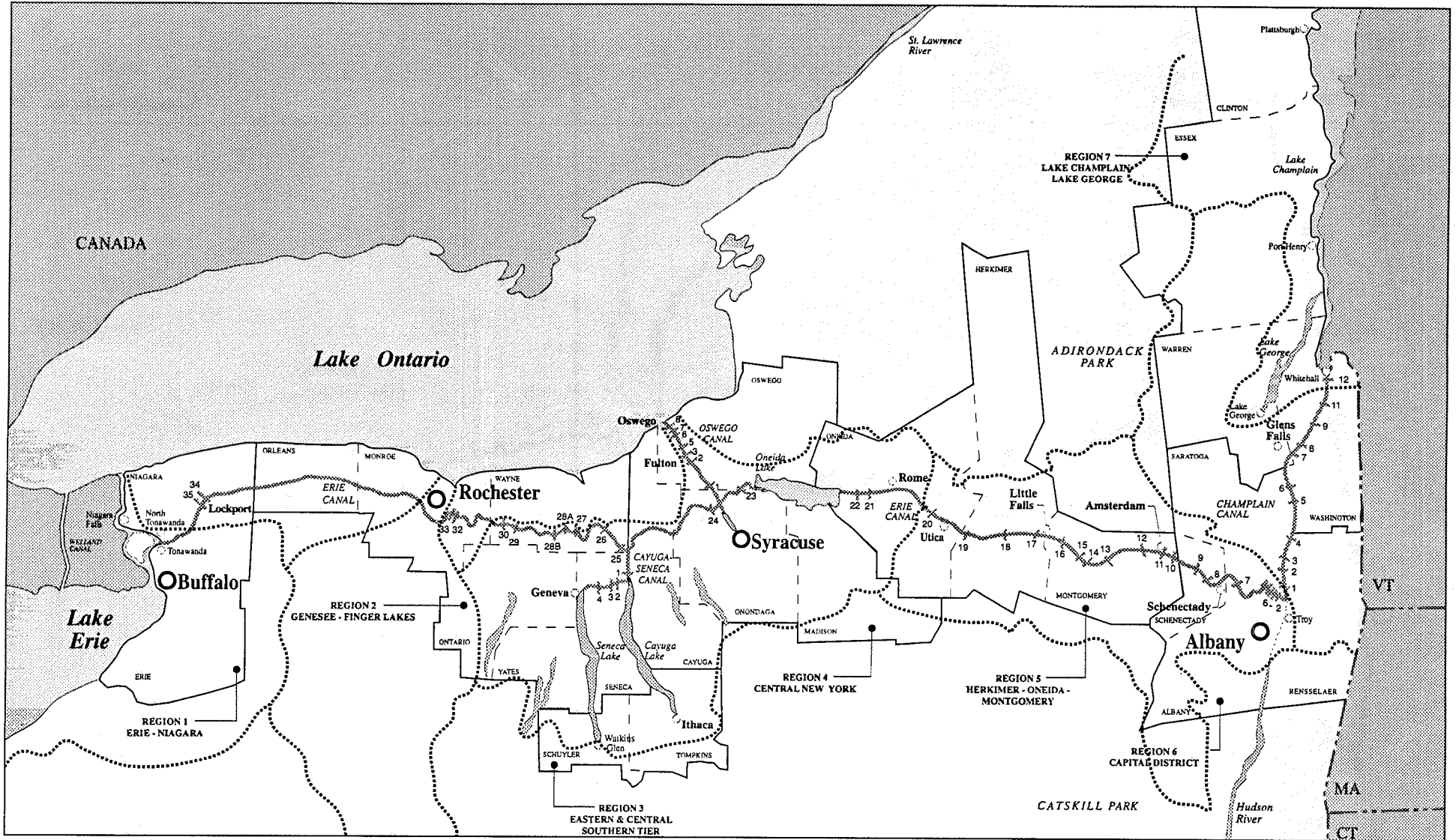
NEW YORK STATE CANAL RECREATIONWAY PLAN








NYS Canal Profiles

Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN



-  NYS Canal System
-  35 Lock number
-  Planning region boundary
-  County boundary

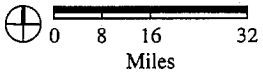
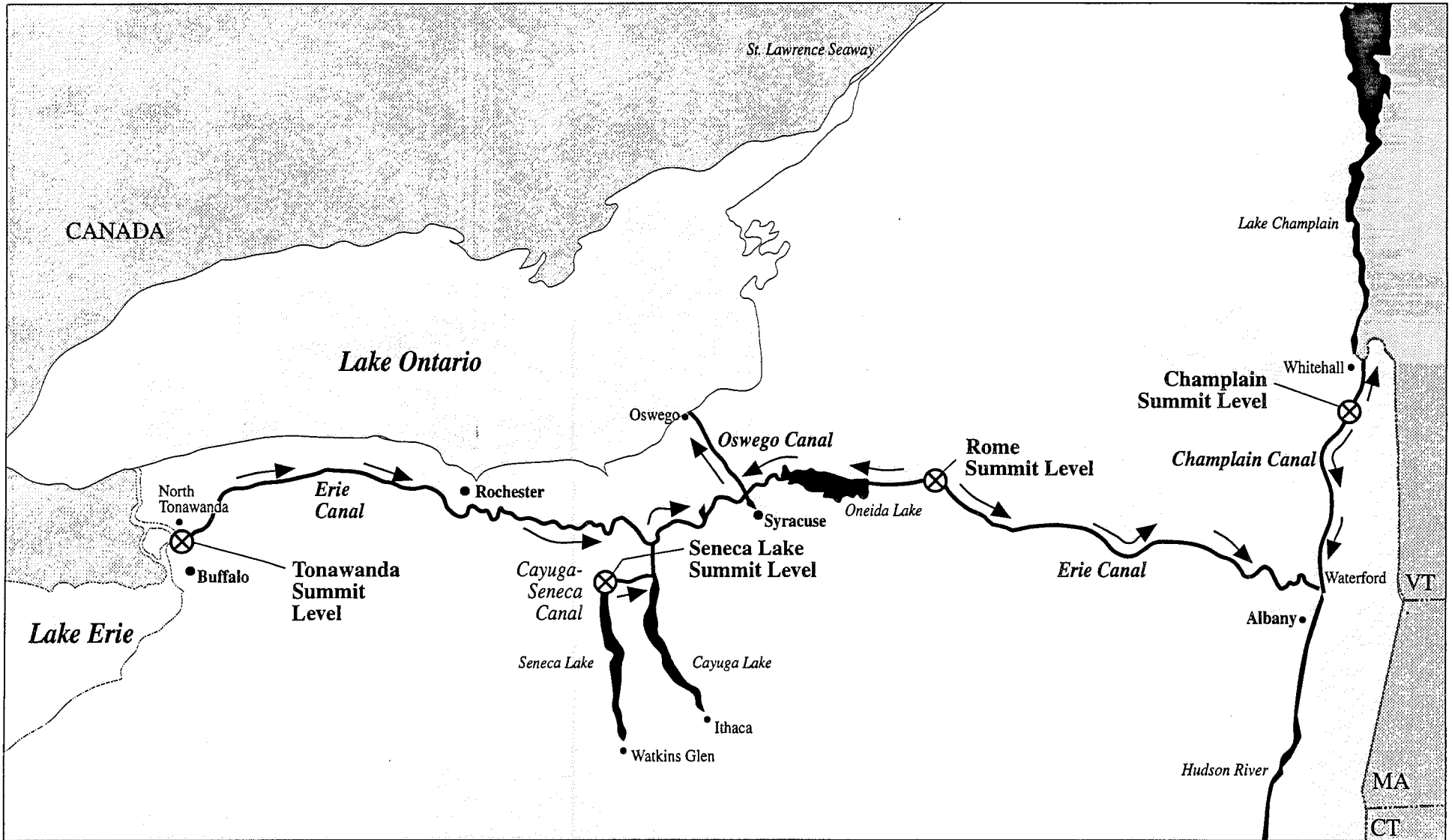
 Drainage basin

NYS Canal Drainage Basins

Beyer Blinder Belle Consortium

Exhibit 4-11

NEW YORK STATE CANAL RECREATIONWAY PLAN



⊗ Summit level

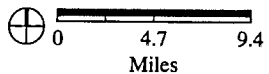
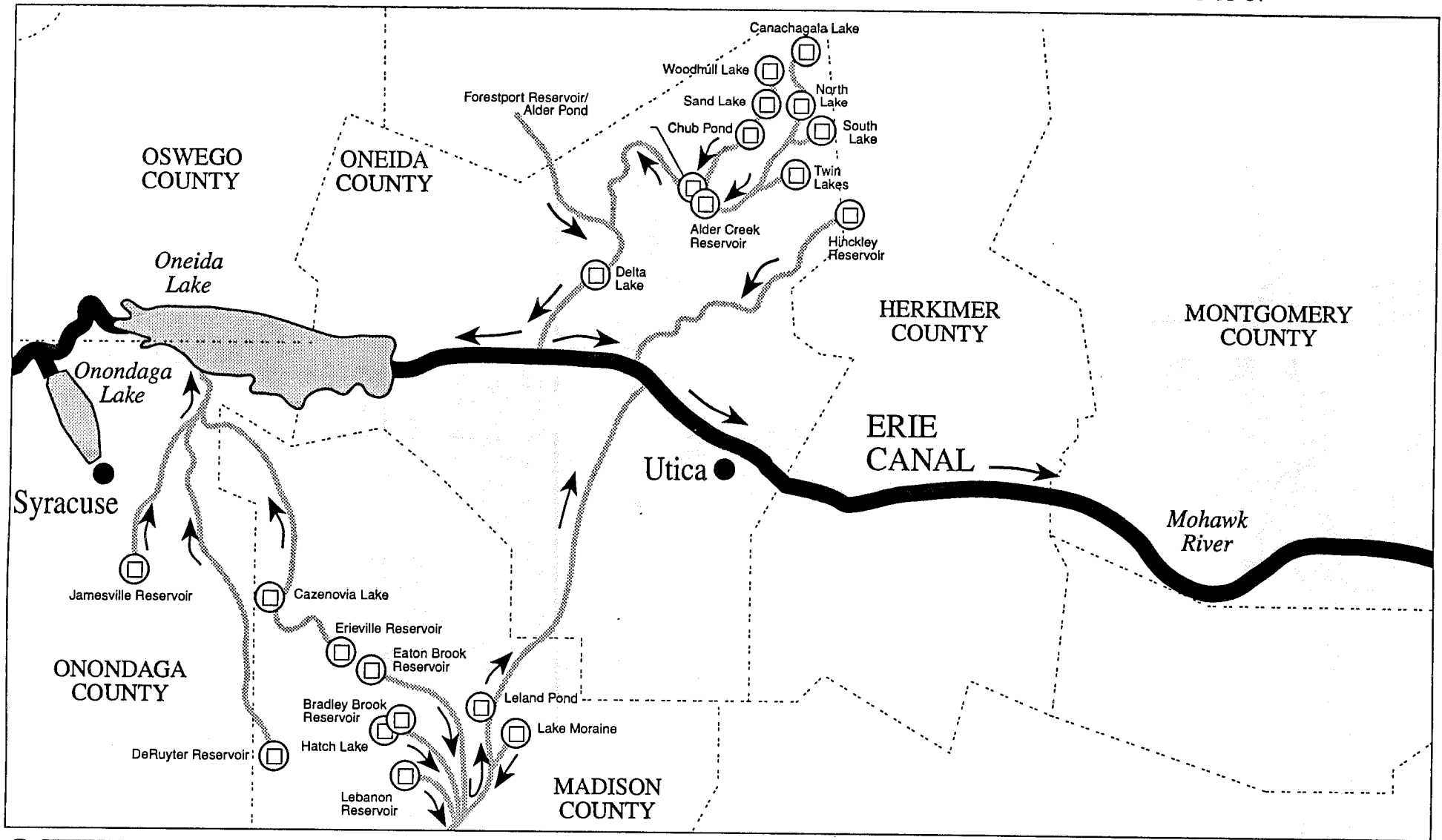
← Direction of flow

NYS Canal System Hydrology

Beyer Blinder Belle Consortium

Exhibit 4-12

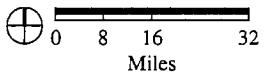
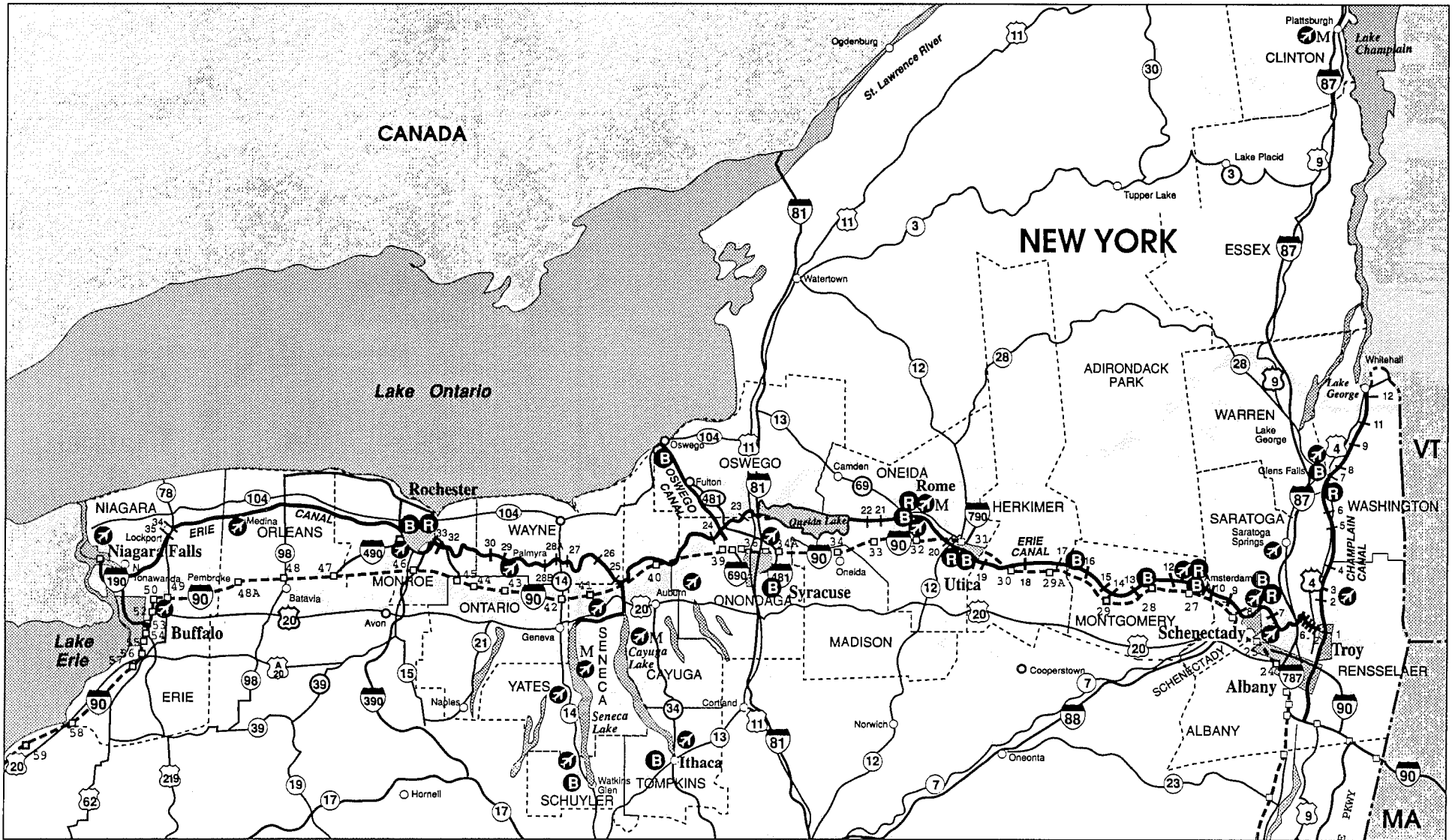
NEW YORK STATE CANAL RECREATIONWAY PLAN



-  Erie Canal
-  Creek / Feeder
-  Lake
-  Reservoir
-  Flow Arrow

**NYS Canal System
Reservoirs**
Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN



- B** Bus terminal
- R** Rail terminal
- M** Municipal airport

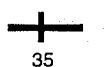
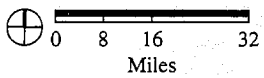
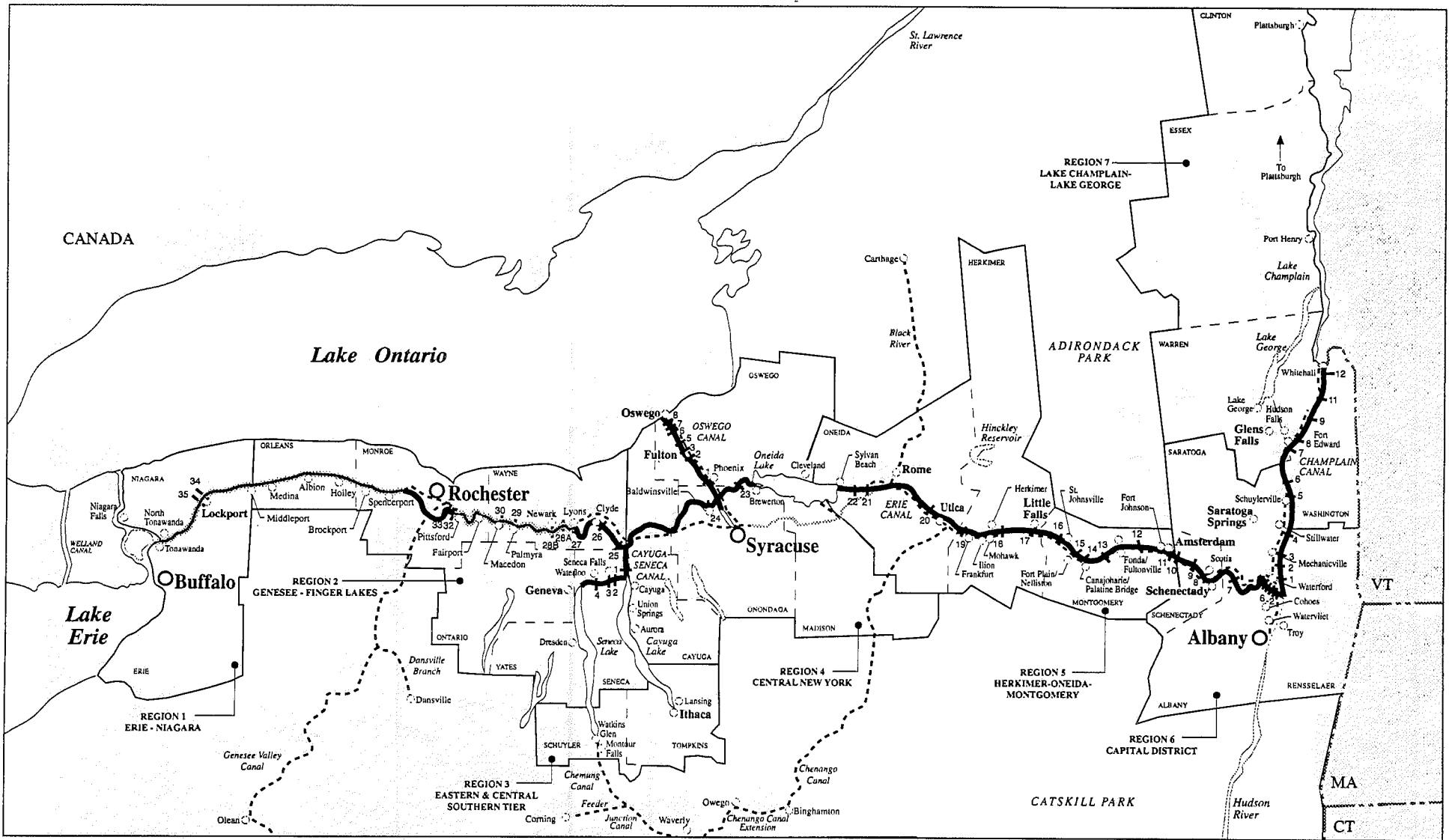
- M** Military airport
- 48** NYS Thruway Interchange number
- 35** NYS Canal System Lock number

--- County boundary

Transportation Facilities

Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN



NYS Canal System
Lock number

— Planning Region boundary

- - - County boundary

— Current canal in 1918 R.O.W.

▨ Old canal widened for present canal

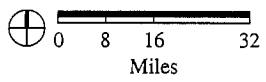
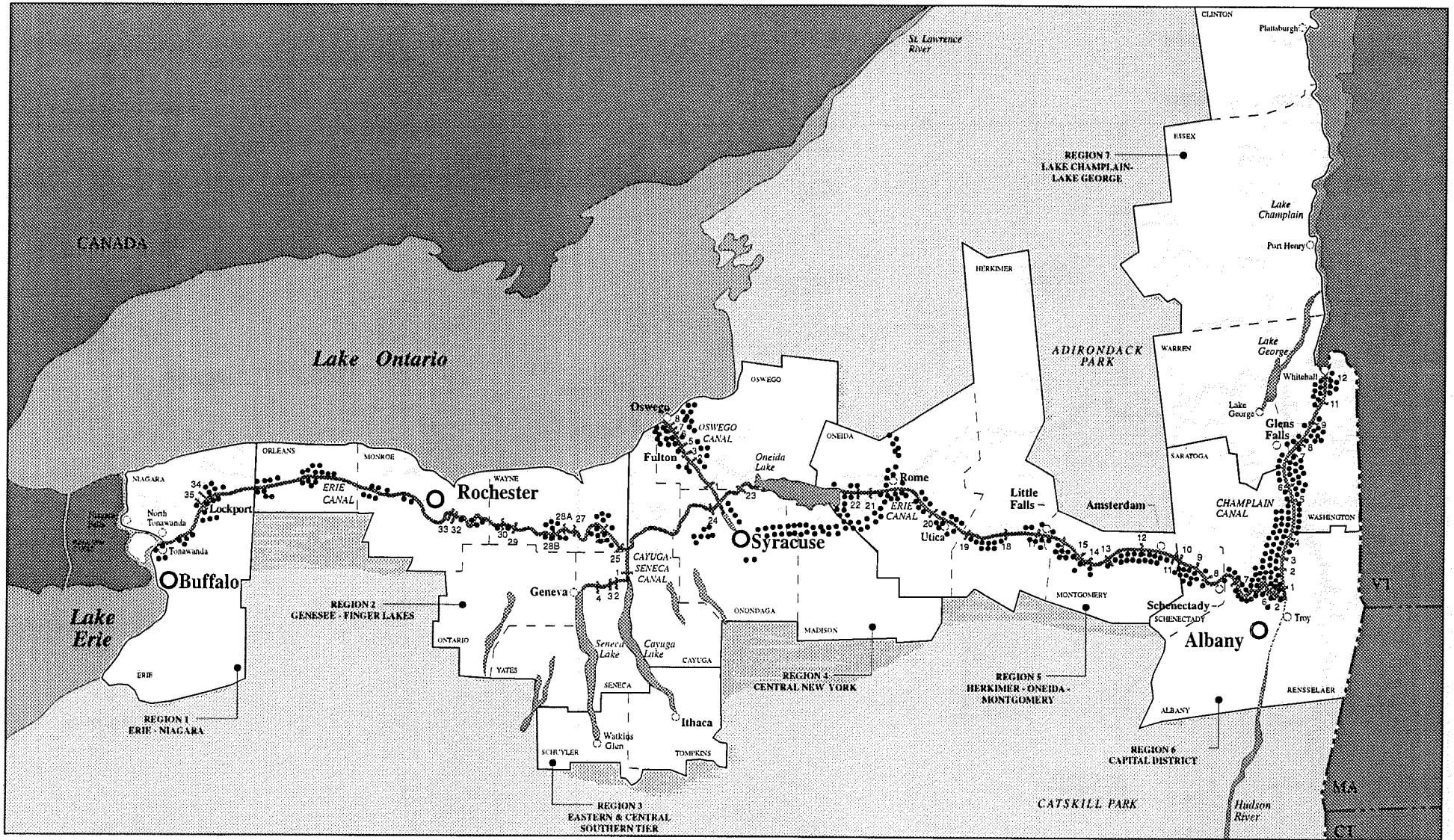
- - - Discontinued canal





⋯ Old Erie Canal State Park


Historic Canal System

Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN



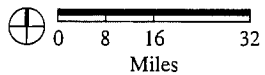
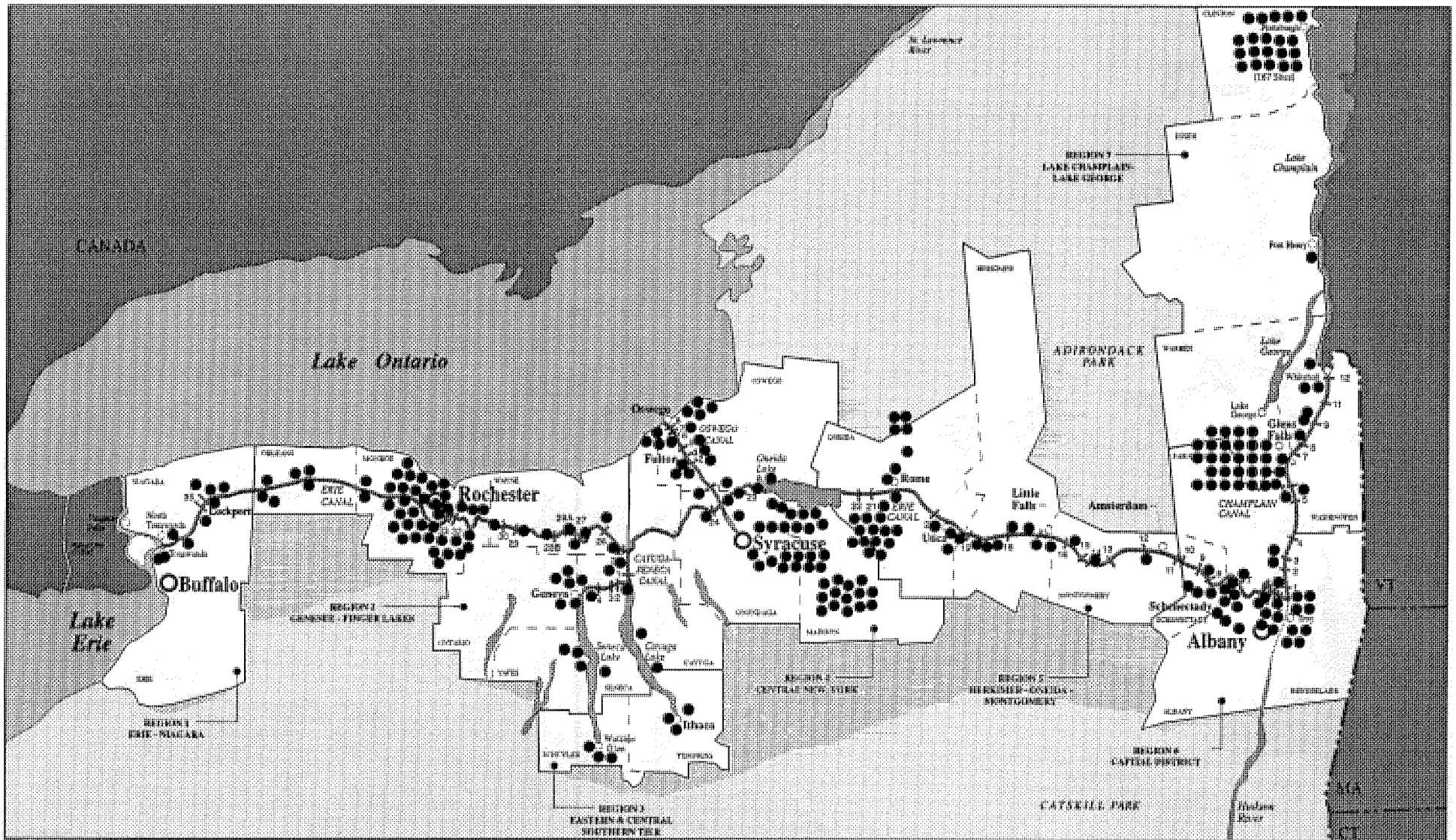
-  NYS Canal System
-  Lock number
-  Planning region boundary
-  County boundary





-  Historic canal structures


Historic Canal Structures

Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN



-  NYS Canal System
-  Lock number
-  Planning region boundary
-  County boundary

-  National Register Site or District

Note: This drawing illustrates the general geographic concentration of historic sites and districts along the NYS Canal System.

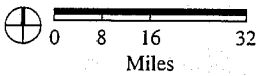
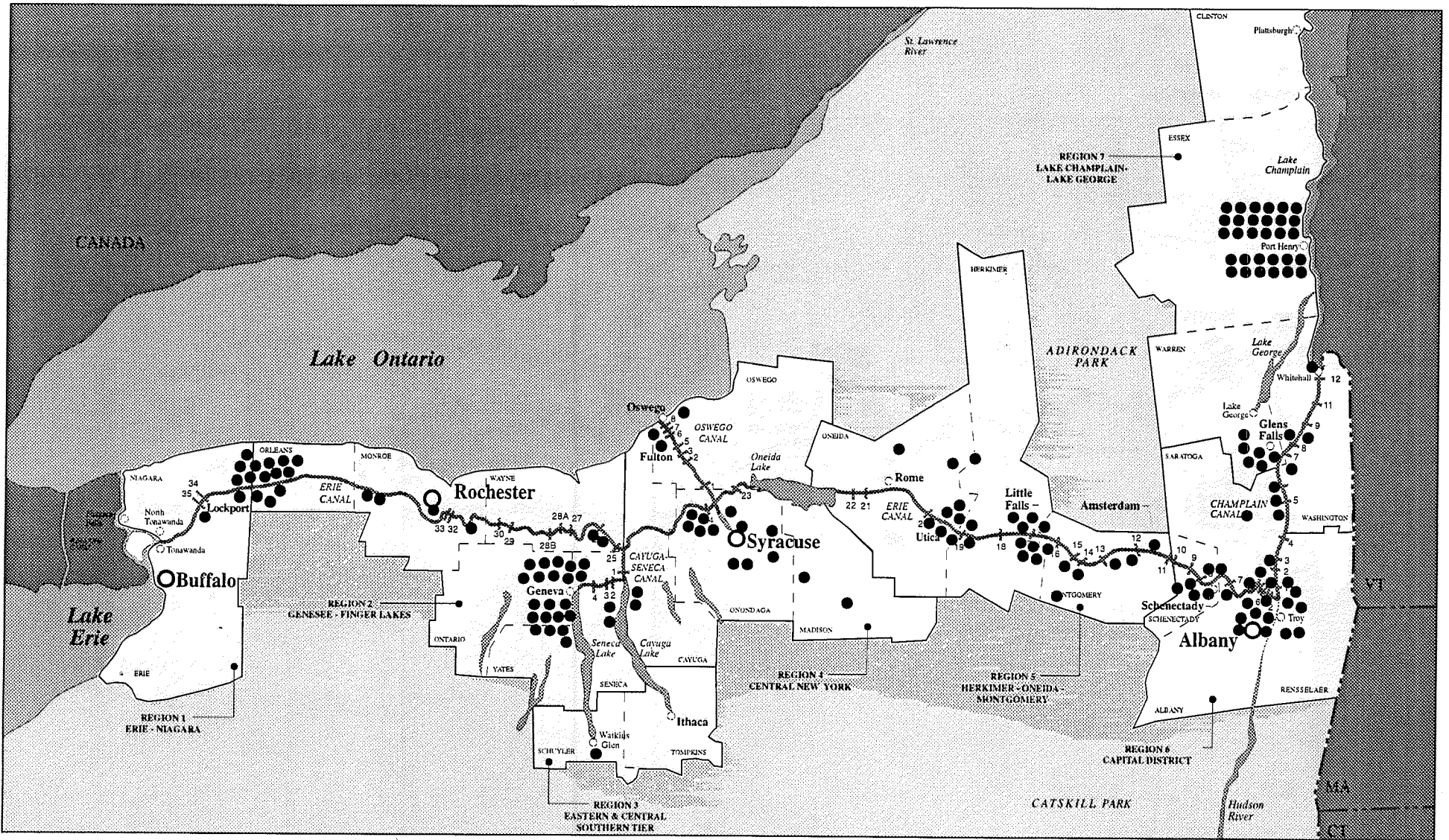
Note: The NYS Canal System has also been determined to be eligible for listing on the National Register.

National Register of Historic Places Sites and Districts

Beyer Blinder Belle Consortium

Exhibit 4-17

NEW YORK STATE CANAL RECREATIONWAY PLAN



- 35 NYS Canal System Lock number
- Planning region boundary
- County boundary

● National Register Eligible Site

Note: This drawing illustrates the general geographic concentration of eligible sites along the NYS Canal System.

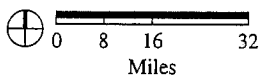
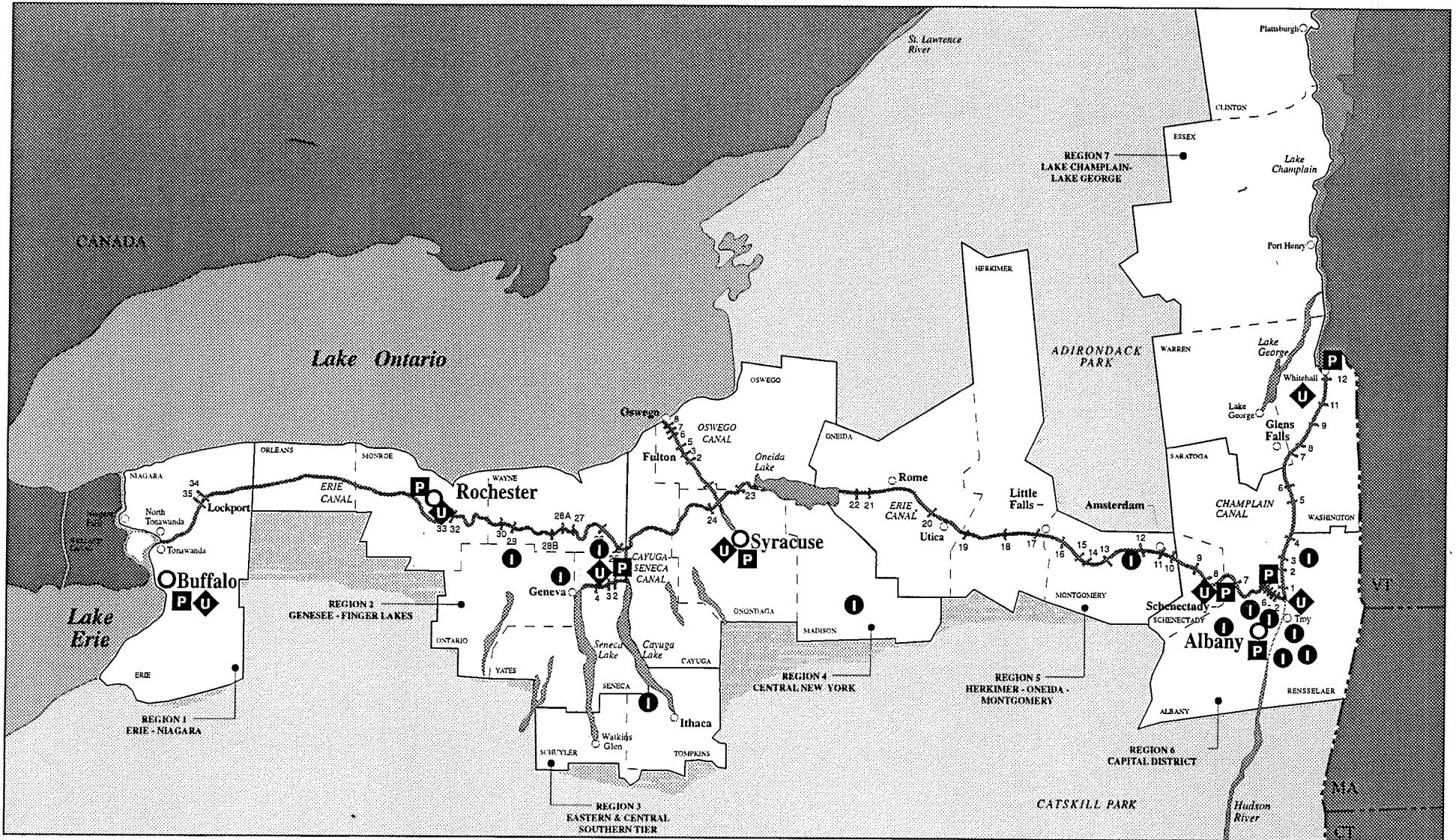
Note: The NYS Canal System has also been determined to be eligible for listing on the National Register.

National Register of Historic Places-Eligible Properties Sites

Beyer Blinder Belle Consortium

Exhibit 4-18

NEW YORK STATE CANAL RECREATIONWAY PLAN



- NYS Canal System
- Lock number
- Planning region boundary
- County boundary

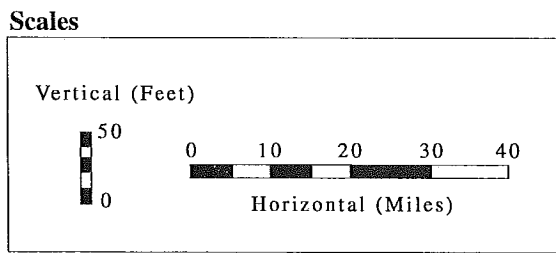
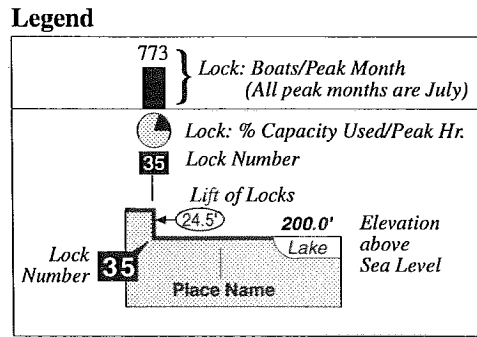
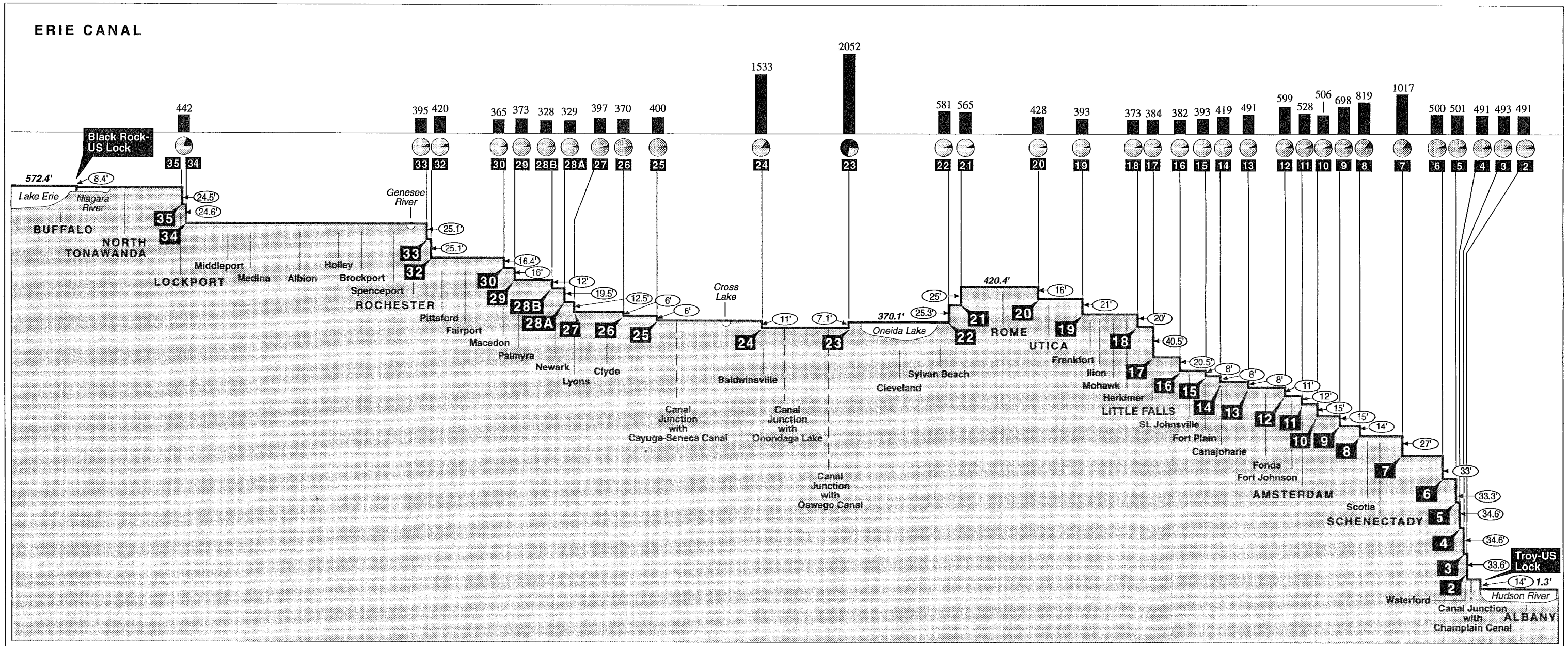
- Existing interpretive facilities
- Proposed interpretive facilities
- Existing urban cultural park

Interpretive Facilities

Beyer Blinder Belle Consortium

Exhibit 4-19

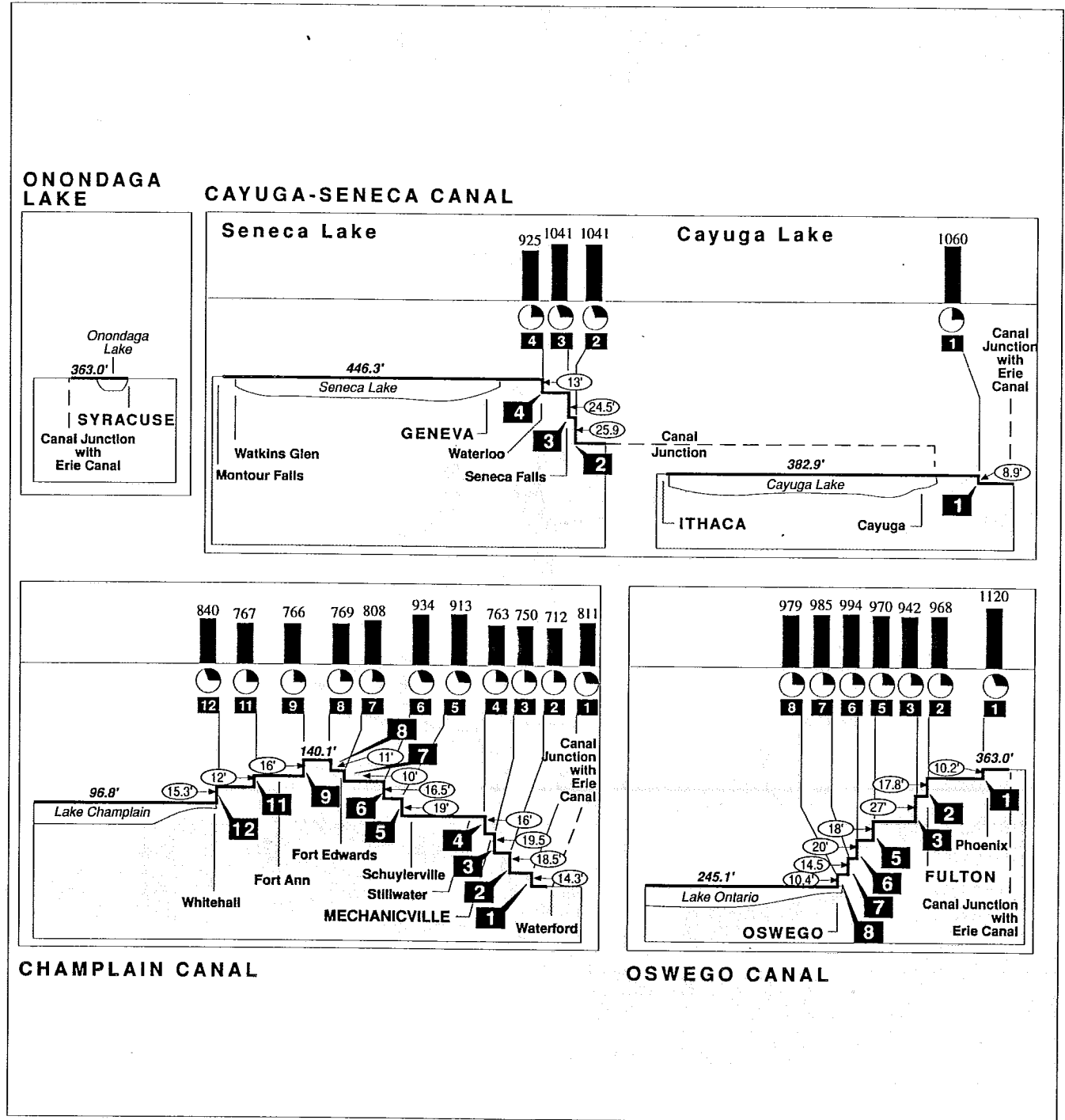
NEW YORK STATE CANAL RECREATIONWAY PLAN



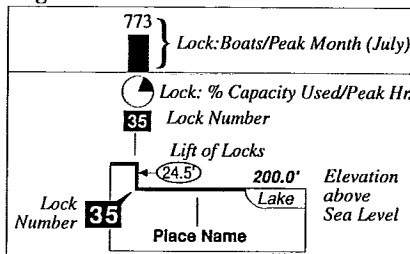
**July 1994 Lock Activity
Erie Canal**

Beyer Blinder Belle Consortium

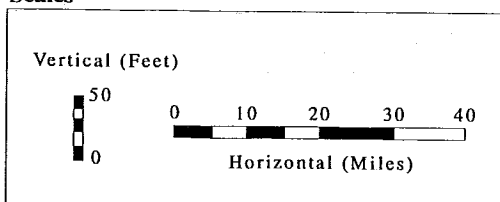
NEW YORK STATE CANAL RECREATIONWAY PLAN



Legend



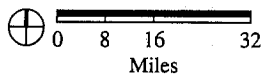
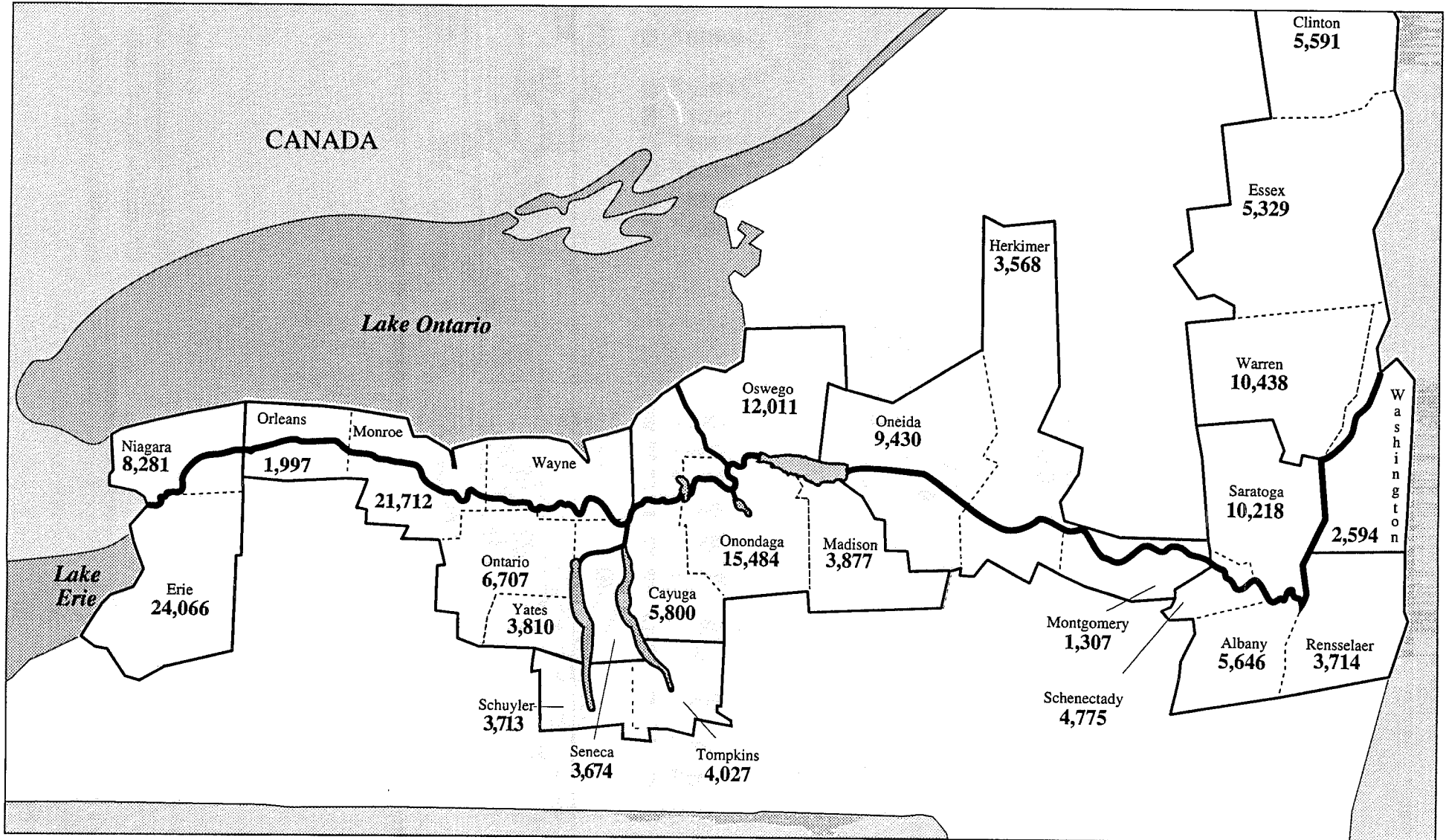
Scales



July 1994 Lock Activity Oswego, Champlain and Cayuga-Seneca Canals

Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN

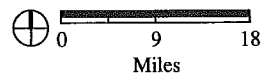
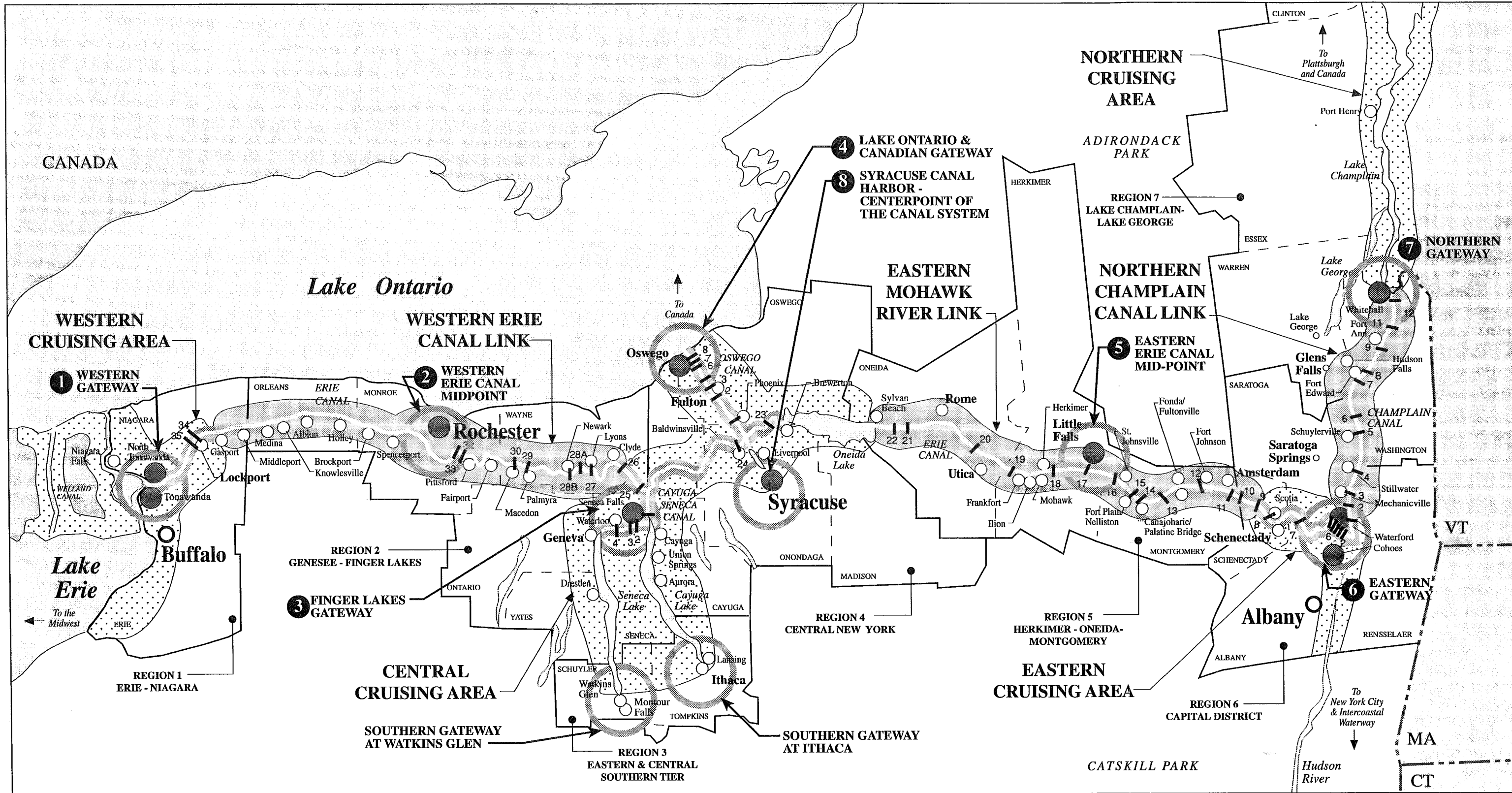


- NYS Canal System
- Planning Region Boundary
- County Boundary

**Motorboat Registration,
1992 - County of Use**

Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN



- NYS Canal System
- Canal link
- Canal Harbor
- Cruising area
- Canal port
- Canal greenway
- Canal waterway
- County boundary
- Planning region boundary

Canal Cruising Areas and Links

Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN

Exhibit 4-24a
Existing Marinas
 (Location map 4-24b follows)

(from NYS Canals Geographic Information System Inventory, November 1993,
 updated by the NYS Canal Corporation, Spring 1995)

**Restricted to private or member-only use; not open to the general public*

COUNTY	MUNICIPALITY	MAP ID #	SITE NAME
REGION 1 - ERIE - NIAGARA			
Erie	Grand Island	303	Beaver Island State Park
Niagara	No. Tonawanda	5	Placid Harbour Marina
Niagara	No. Tonawanda	8	Wardell Boatyard
Niagara	No. Tonawanda	10*	Hi-Skipper Marina
Niagara	No. Tonawanda	11	Smith Boys Inc. Marina
Niagara	Pendleton	17	Hide Away Bay Marina
Niagara	Middleport	21	Basket Factory
Erie	Amherst	14	Amherst Marine Center, Inc.
Niagara	Lockport	301	West Canal Marina
Niagara	Lockport	302	Nelson C. Goehle Marina
REGION 2 - GENESEE - FINGER LAKES			
Orleans	-	-	<i>No marina listed</i>
Monroe	Greece	38	Capt. Jeff's Marina
Monroe	Fairport	319	Fairport Village Landing
Wayne	Lyons	68	Millers Marina
Seneca	Fayette	71*	Seneca Yacht Club
Seneca	Fayette	74	Barrett Marina
Seneca	Fayette	75	Seneca Lake State Park
Seneca	Fayette	76	G.R.S. Seneca Marine
Seneca	Tyre	93	Oak Orchard Marina & Campground
Seneca	Waterloo	57	Hidden Harbor Marina
Seneca	Waterloo	72	A&B Marina
Seneca	Waterloo	73	Inland Harbor Marina & Campground
Seneca	Waterloo	89	Waterloo Harbor
Seneca	Waterloo	305	Lakeland Marina Inc.
Ontario	Geneva	67	Roy's Marina
Yates	Milo	63	Alice's Marina Inc.
REGION 3 - EASTERN AND CENTRAL SOUTHERN TIER			
Schuyler	Dix	86	Ervay's Inc.
Schuyler	Watkins Glen	84	Glen Harbor Marina
Schuyler	Watkins Glen	273	Village Marina
Tompkins	Cayuga Heights	110	East Shore Sailing
Tompkins	Ithaca	113	Ithaca Boating Center Inc.
Tompkins	Ithaca	114	Allan H. Treman State Marine Park
Tompkins	Ithaca	307	Johnson Boat Yard and Marina
Tompkins	Ithaca	308	Kelly's Dockside Cafe
Tompkins	Lansing	117	Finger Lakes Marine Service Inc.
Tompkins	Trumansburg	306	Taughanock Falls State Park

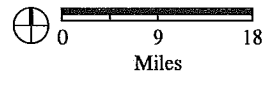
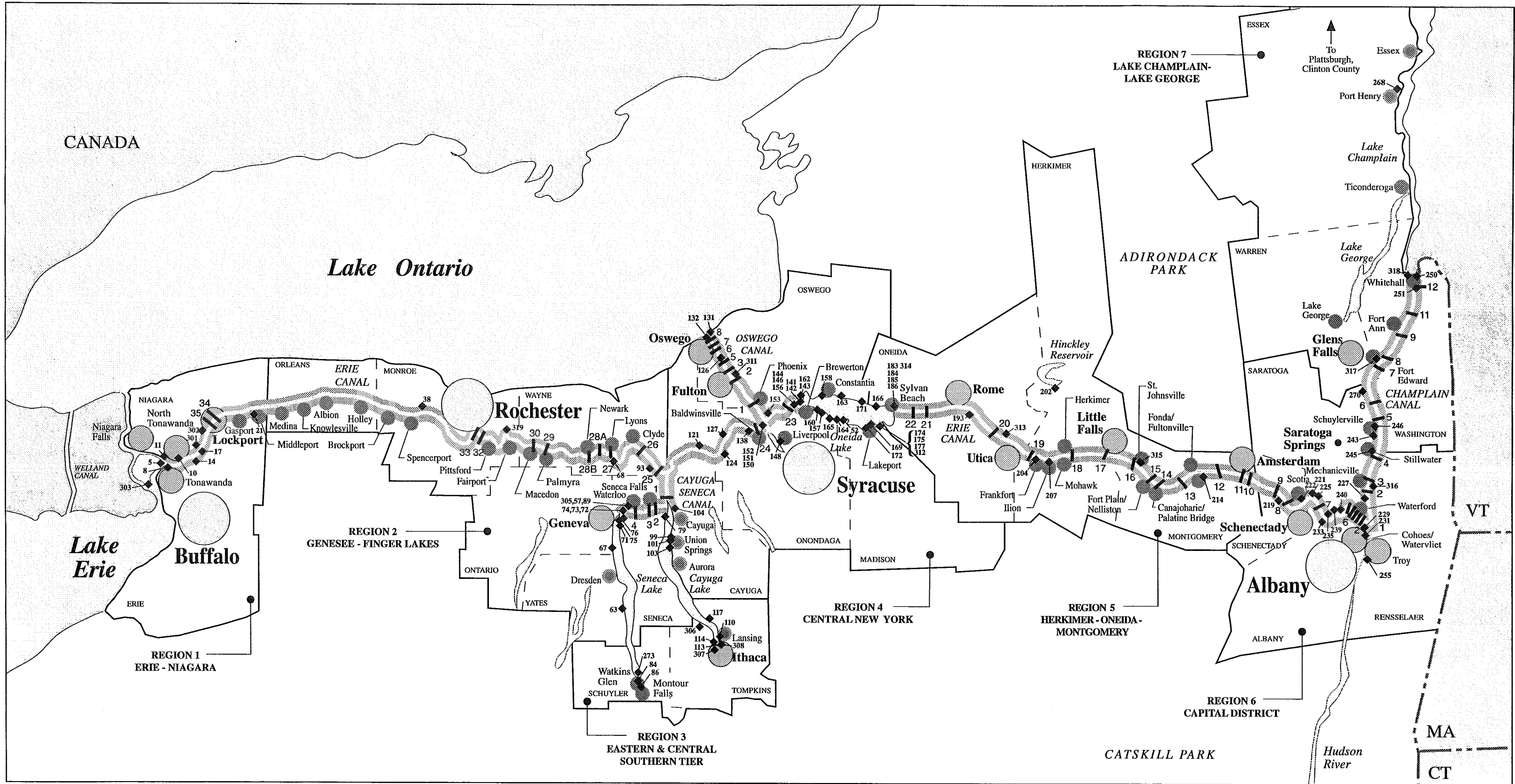
NEW YORK STATE CANAL RECREATIONWAY PLAN

COUNTY	MUNICIPALITY	MAP ID #	SITE NAME
REGION 4 - CENTRAL NEW YORK			
Cayuga	Aurelius	104	Lockview Marina
Cayuga	Brutus	121	Riverforest Park Marina
Cayuga	Cato	127	Cross Lake Marina
Cayuga	Springport	99	Troys Marina Inc.
Cayuga	Springport	103	Castellis Marina
Cayuga	Union Springs	101	Hibiscus Harbor Inc.
Onondaga	Cicero	144	Theisen Marina
Onondaga	Cicero	146	Brewerton Boatyard Inc.
Onondaga	Cicero	156*	Ess-Kay Yards Inc.
Onondaga	Cicero	157	Lake Shore Yacht & Country Club
Onondaga	Cicero	160	Aero Marina
Onondaga	Cicero	165	Becon's Bay Marina
Onondaga	Clay	153	Pirate's Cove Marina
Onondaga	Elbridge	124	Quimby's Marina Inc.
Onondaga	Lysander	138	Cooper's Marina Inc., Baldwinsville
Onondaga	Lysander	150	Sun Harbor
Onondaga	Lysander	151	J&S Marine
Onondaga	Lysander	152	Cold Springs Harbour
Onondaga	Salina	148	Onondaga Lake Park Marina
Oswego	Cleveland	171	App's Landing Bait and Tackle
Oswego	Constantia	163	Boat House Marina
Oswego	Fulton	311	Canalview Marina
Oswego	Oswego	131	Oswego Marina
Oswego	Oswego	132	Oswego Nautical Inc.
Oswego	Volney	126*	Rookey Brothers
Oswego	West Monroe	141	Trade-A-Yacht Marina
Oswego	West Monroe	142*	Tri Bridge Marina
Oswego	West Monroe	143	Bradbury's Boatel
Oswego	West Monroe	162	Big Bay Marina
Madison	Lenox	174	Oneida Lake Marina
Madison	Lenox	175	Johnnie's Pier 31 Restaurant and Marina
Madison	Lenox	177	Marion Manor
Madison	Lenox	312	South Bay Marina
Madison	Sullivan	52	Fisher Bay Marina
Madison	Sullivan	164	Anchorage Marina
Madison	Sullivan	169	Lakeport Marina
Madison	Sullivan	172	Fremack Marine Sales & Service Inc.

NEW YORK STATE CANAL RECREATIONWAY PLAN

COUNTY	MUNICIPALITY	MAP ID #	SITE NAME
REGION 5 - HERKIMER - ONEIDA - MONTGOMERY			
Oneida	Rome	193	Riverside Marina Inc.
Oneida	Sylvan Beach	183	Skinner's Harbor
Oneida	Sylvan Beach	184	Lone Pine Campground and Marina
Oneida	Marcy	313	Marcy Marina
Oneida	Verona	185	Skinner's Harbor
Oneida	Verona	186	Holmes Marine Basin
Oneida	Verona	314	Sylvan Beach Boat Yard
Herkimer	Ilion	207	Ilion Village Marina
Herkimer	Russia	202	Trail's End
Herkimer	Schuyler	204	Frankfort Harbour Marina
Montgomery	St. Johnsville	315	St. Johnsville Municipal Marina
Montgomery	Fonda	214	Poplars Inn & Marina
REGION 6 - CAPITAL DISTRICT			
Schenectady	Glenville	219	Arrowhead Marina and RV Park
Schenectady	Glenville	221	Mohawk Park Marina
Schenectady	Glenville	222*	Wilson's Marine Service Inc.
Albany	Cohoes	229	Capital District Marine Sales
Albany	Cohoes	231	Van Schaick Island Marina
Albany	Colonie	233	Blain's Bay Marina
Albany	Colonie	239	Crescent Bridge Marina
Albany	Colonie	240	Albany Marine Service Marina
Rensselaer	Schaghticoke	316	Riverbend Marina
Rensselaer	Troy	255	Troy Town Dock and Marina
Saratoga	Clifton Park	225	Schenectady Yacht Club
Saratoga	Halfmoon	227	Lock One Marina
Saratoga	Halfmoon	235*	Crescent Boat Club
Saratoga	Moreau	270	West River Road Marina
Saratoga	Saratoga	243	Coveville Marina
Saratoga	Schuylerville	246	Schuyler Yacht Basin
Saratoga	Stillwater	245	Admiral's Marina
REGION 7 - LAKE CHAMPLAIN - LAKE GEORGE			
Washington	Fort Edward	317	Fort Edward Yacht Basin
Washington	Whitehall	250	Lock 12C Marina
Washington	Whitehall	251	Liberty Eatery
Washington	Whitehall	318	Whitehall Marina
Warren	-	-	No marina listed
Essex	Port Henry	268	Van Slooten Marina
Clinton	-	-	No marina listed

NEW YORK STATE CANAL RECREATIONWAY PLAN



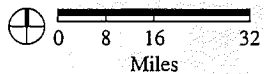
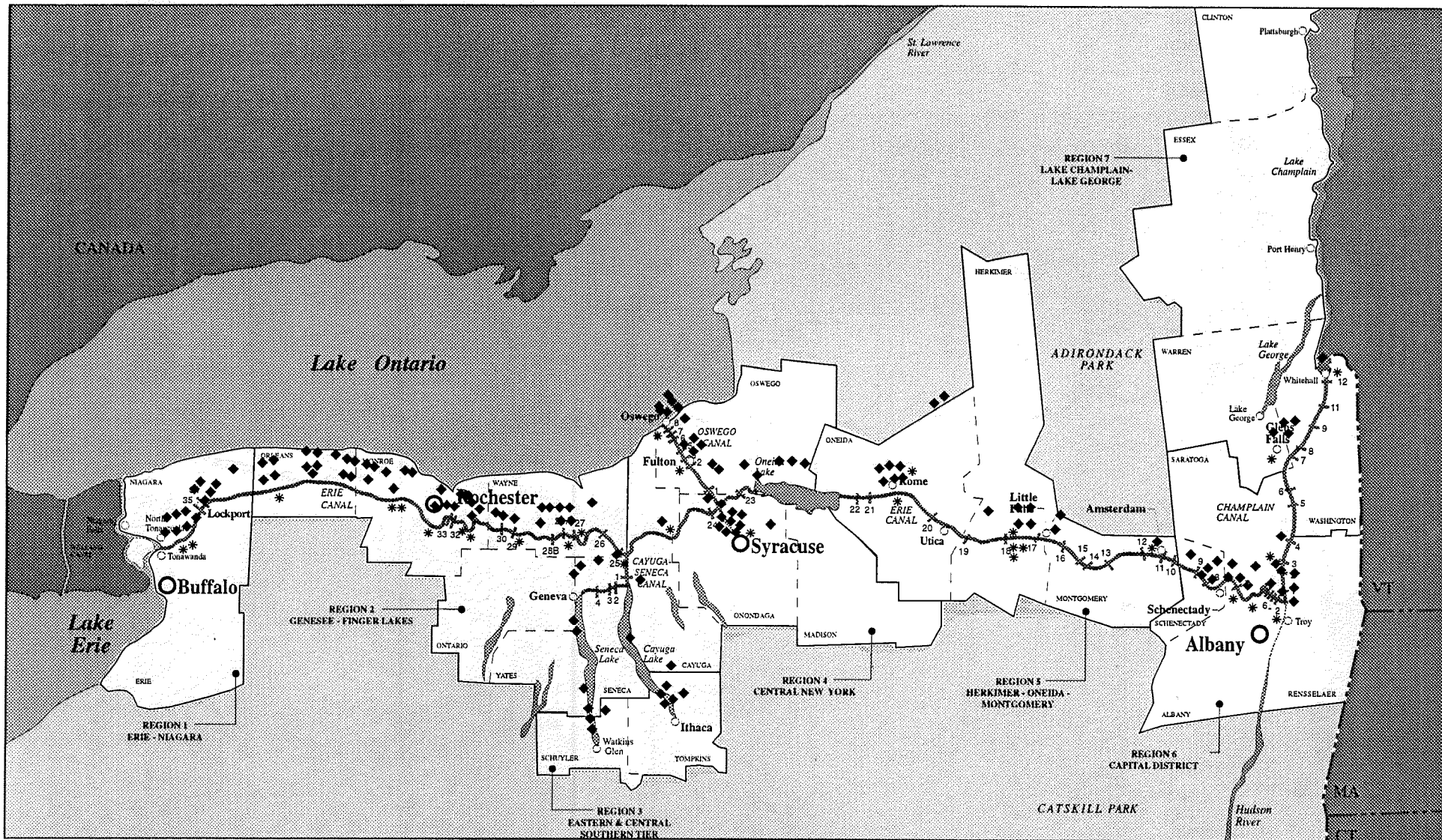
- NYS Canal System Lock
- Canal greenway
- Canal waterway
- Major City
- Small City
- Village
- 940 Marina (with GIS Map Reference)
- County Boundary
- Planning Region Boundary

Existing Marinas

Beyer Blinder Belle Consortium

Exhibit 4-24b

NEW YORK STATE CANAL RECREATIONWAY PLAN

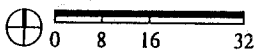
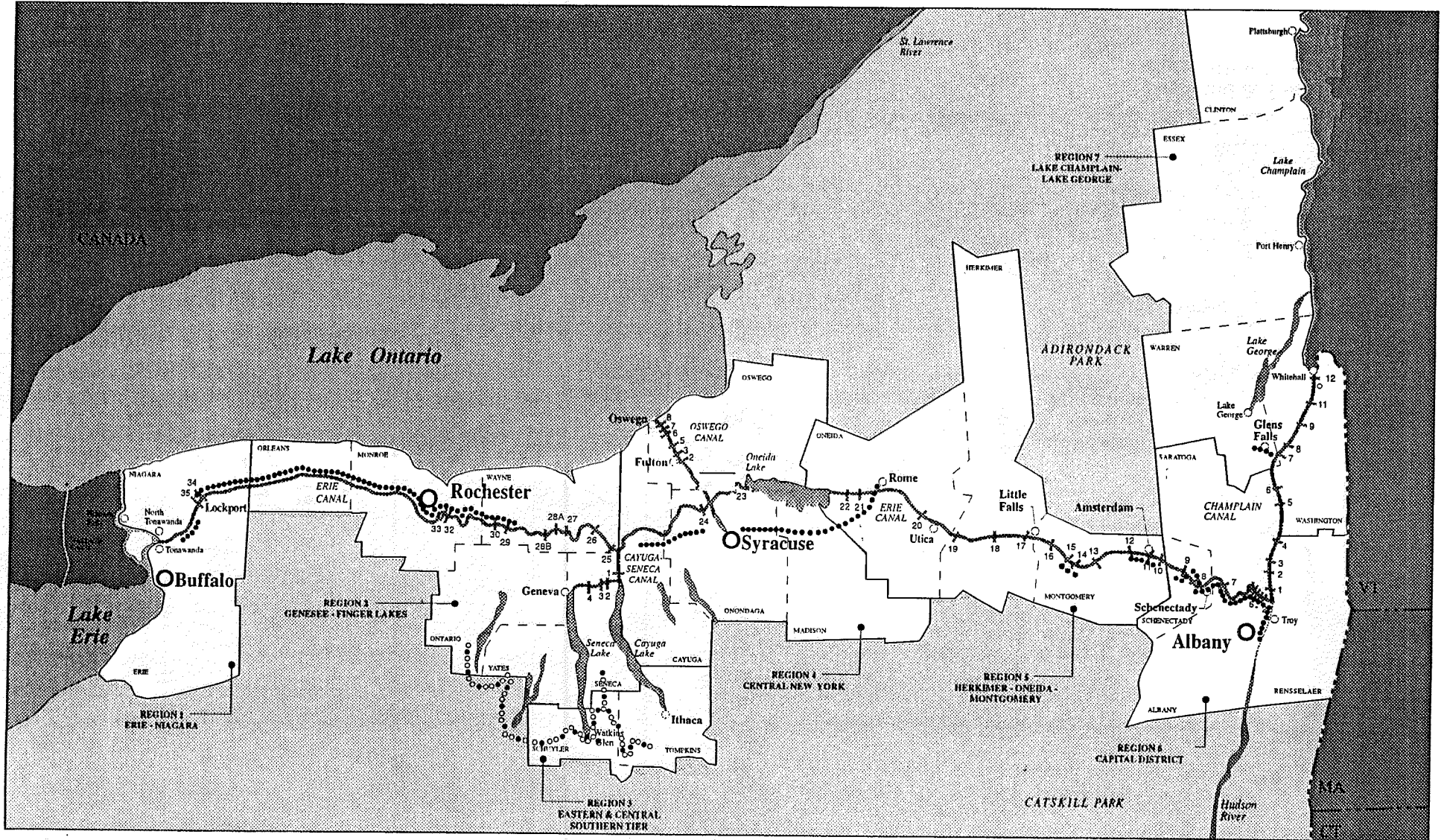


- NYS Canal System
Lock number
- Planning region boundary
- County boundary

- * Regional recreational facilities
- ◆ Local recreational facilities

**Regional & Local
Recreation Facilities**
Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATIONWAY PLAN



- NY State Canal System
- Lock number
- Planning region boundary
- County boundary

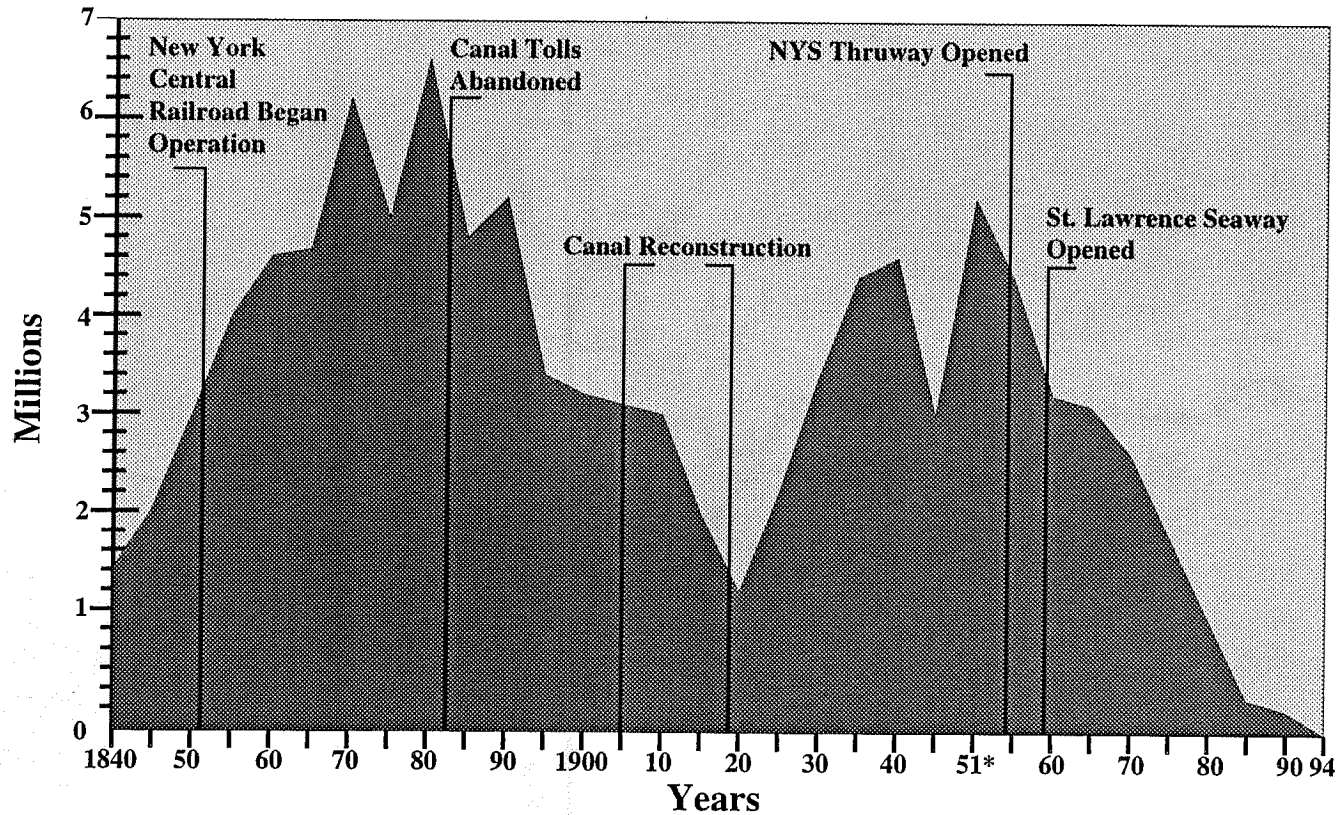
- Existing Canalway Trail
- Other existing trails

Existing Canalway Trail

Beyer Blinder Belle Consortium

Exhibit 4-26

NYS Canal System Tonnage

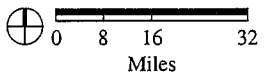
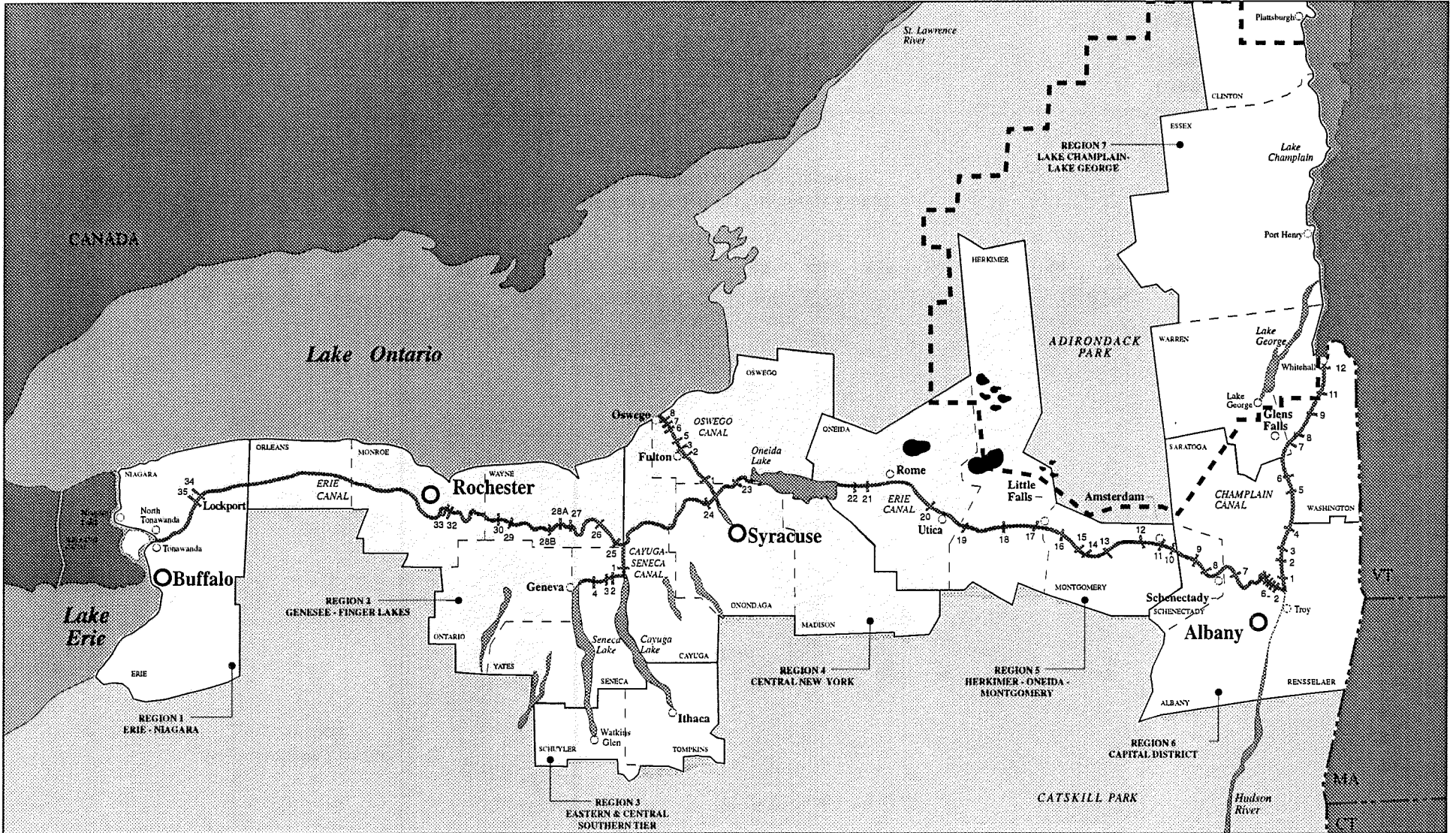


* Denotes highest year for tonnage on Barge Canal
 (Source: NYS Canal System Tonnage Reports)

Commercial Shipping Trends and Tonnage

Beyer Blinder Belle Consortium

NEW YORK STATE CANAL RECREATION WAY PLAN



— NYS Canal System
35 Lock number

— Planning region boundary

- - - County boundary

- - - Adirondack Park boundary

● Regulating reservoirs

**Adirondack Park
Boundary and Reservoirs**

Beyer Blinder Belle Consortium

Exhibit 4-28