

Draft Generic Environmental Impact Statement

Southwest Area Land Use Plan City of Ithaca, Tompkins County, NY

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LIST OF ACRONYMS

ACOE	Army Corps of Engineers
ADT	Average Daily Traffic
C&D	Construction and Demolition
dBA	Decibels
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
HVAC	Heating, Ventilation, and Air Conditioning
ISO	Insurance Services Office
GEIS	Generic Environmental Impact Statement
GLA	Gross Leasable Area
GPD or gpd	gallons per day
gpm	gallons per minute
LOS	Level of Service
MGD	Million Gallons per Day
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
SEQRA	State Environmental Quality Act
SPDES	State Pollutant Discharge Elimination System
TCAT	Tompkins Consolidated Area Transit
TCDOH	Tompkins County Department of Health
TCRSWC	Tompkins County Recycling and Solid Waste Center
TNC	The Nature Conservatory
USGS	United States Geological Survey
VPD	Vehicles per Day

Executive Summary

This draft Generic Environmental Impact Statement (DGEIS) addresses the potential impacts of the adoption and implementation of the Southwest Area Land Use Plan. A related action to be considered at this time is acquisition or official mapping of proposed transportation rights-of-way. The Southwest Area Land Use Plan is intended to guide future use and development of approximately 381 acres of land bounded by Clinton Street to the north, Cayuga Inlet to the west, and Meadow Street and Elmira Road to the east and south. The Plan study area includes approximately 160 acres of potentially developable land and 25 acres designated as substitute parkland in conjunction with the alienation of the Southwest Park parcel. There are an additional 35 acres of designated substitute parkland adjacent to the study area.

The City of Ithaca, in seeking adoption of the Plan, is intent upon appropriately guiding land use in southwest Ithaca to benefit the community as a whole. To this end, the Plan recommends taking advantage of the area's assets with regard to location and parcel size to accommodate primarily non-residential development that will contribute to the City's revenue stream. The land use recommendations also include provision of parkland and recreational facilities, and flexibility to accommodate mixed use development including limited residential development if there is market support for such projects. At the same time, the City will continue its efforts to improve and strengthen existing City neighborhoods.

Adoption of the Plan and development would result in the following benefits:

- Stabilization or increase in City sales and property tax revenues;
- Development of a multi-modal transportation link between West Hill and the Route 13 commercial corridor and Buttermilk Falls State Park;
- Opportunity for the City to maintain or enhance its competitiveness within the region as a desirable location to live, work, shop and recreate;
- Job creation;
- Creation of substitute parkland.

The following summarizes the six hypothetical use/scale alternatives that have been analyzed in this Draft GEIS.

Alternative	Overall Size (sq.ft.)	Land Use Mix			
		Retail (sq.ft.)	Office (sq.ft.)	Light Industrial (sq.ft.)	Residential (units)
Alt. 1	1,050,000	600,000	250,000	200,000	--
Alt. 2	600,000 + 600 units residential	400,000	100,000	100,000	600 units residential
Alt. 3	500,000	500,000	--	--	--
Alt 4	750,000	500,000	250,000	--	--
Alt. 5	1,000,000	800,000	200,000	--	--
Alt. 6	1,250,000	1,000,000	250,000	--	--

Within this document the environmental setting for the study area was developed. For each element of the environmental setting, the impacts as a result of the Plan's adoption based upon

the various alternatives presented were identified. For those impacts identified, potential mitigation alternatives were developed. Should mitigation be unfeasible, unavoidable impacts were identified. The following Table presents the elements of the environmental setting, impacts identified, mitigation, and unavoidable impacts presented in this document.

Summary of Impacts

Element	Positive Impacts	Adverse Impacts	Mitigation	Unavoidable Impacts
Natural Features – Soils	None	Topsoil Removed, Subsidence	Erosion Control Measures, Proper Engineering Practices	None
Land Use and Zoning	Planned Development, Parkland Preservation	Change in Current Land Use	Rezoning to Mixed Use, Draft Design Guidelines	None
Water Resources – Wetlands	None	Loss of Wetlands	Replacement Wetlands	None
Water Resources – Surface Water	Flood Mitigation	Increased Stormwater Runoff Volume, Water Quality Degradation	Design Criteria, Proper Engineering Controls (Swales, Water Quality Manholes, etc.)	None
Water Resources – Ground Water	None	None	Proper Engineering Controls	None
Fill Areas	Remediation of Fill Areas, Development of Unusable Lands, Visual Improvements	Methane Buildup under Structures Construction Impacts, Buried Waste Removal, Dust Generation, Exposure to Buried Wastes	Proper Engineering Controls (Venting, Dust Controls, Erosion Control) Additional Sampling, Health & Safety Plans	None
Air Resources	None	Increased Traffic, Construction Impacts (Dust Generation)	Intersection Improvements, Traffic Calming Measures, Multi-Modal Transportation, Dust Control Measures	None
Visual Resources	Unity of Development	Change in Viewshed	Aesthetic Site Designs, Landscaping, Buffering	Change in Viewshed at Key View Locations
Transportation	None	Increased Traffic Volume, Level of Service Decrease	Intersection Improvements, Traffic Calming Measures, New Intersections	None
Daily Life	None	Construction Noise	Work Scheduling and Proper Vehicle Maintenance	None
Utilities – Water	Funding for Improvements	Insufficient Water Pressure, Pressure Fluctuations, Cost, Construction Activities, Loss of Capacity	Require Fire Pumps, Loop Distribution System, User Fees, Proper Construction Practices, Capital Improvement Plans	None
Utilities - Sewer	Funding for Improvements	Increased Conveyance Costs, Infrastructure Installation	User Fees, Proper Engineering Controls	None
Solid Waste	None	None	None	None
Plants and Animals	Preservation of Negundo Woods	None	None	None
Cultural Resources	None	None	None	None
Community Character – Area Residential Neighborhoods	None	Change in Viewshed, Traffic Increase, Construction-Related Impacts	Traffic Calming Measures, Appropriate Construction Practices	Change in Viewshed
Community Character – Economic	Tax Revenue Increase, Job Creation	Potential Blighting of Other Commercial Districts	Develop Business Improvement Districts and Marketing Strategies	None

Natural Features

Adoption of the Plan will likely spur development in the study area. Topsoil would be stripped from previously undeveloped areas. Subsidence is also a concern given the poor engineering properties of the soils. These impacts are mitigatable through appropriate engineering practices.

Land Use and Zoning

Rezoning of the area to a mixed use classification would have primarily positive impacts to the land use and zoning. Development could occur in a planned manner. Substitute parklands would preserve an important ecosystem in the Negundo Woods.

Water Resources

Adoption of the Plan would allow design criteria to be imposed on development that could act to improve surface water quality in the area through flood mitigation and stormwater management practices. Loss of wetlands would require that substitute wetlands be created, such that several existing low-quality wetlands could be replaced by larger, higher quality wetlands.

Fill Areas

The former dump site contains a large volume of municipal, commercial and residential wastes, primarily from the 1960's and before. Methane gasses are still being produced at low rates by decay of the wastes. Placing impervious structures (buildings and parking lots) over the wastes could result in methane buildup unless proper engineering controls (venting) is provided.

Short-term construction related activities (infrastructure installation, grading, foundations) in areas containing buried wastes may also present health and safety concerns to workers as elevated levels of metals were identified in waste sampling within the former dump site. Additional sampling / waste characterization based upon specific site development plans, along with the requirement for health and safety plans will mitigate these impacts.

Air Resources

Increased traffic volumes and the decrease in intersection level of service would decrease air quality from vehicle emissions. Traffic mitigation efforts (traffic calming, intersection improvements, multimodal transportation) will minimize these air quality impacts.

Visual Resources

Mitigation measures such as landscaping, design development guidelines, and buffering will mitigate visual impacts considerably. However, the change in the viewshed in the area is an unavoidable adverse impact of the Plan's adoption.

Transportation

The intersection capacity analysis identified 10 intersections that would require mitigation to meet the impact threshold of maintaining a Level of Services (LOS) "E" following development based on hypothetical scale/use Alternative 5. Mitigation of the traffic impacts of Alternative 6 was not considered feasible. Mitigation of intersection capacity impacts is expected to include optimizing of signal phasing, addition of through and turning lanes, restriping of intersections and construction of an additional bridge over the Cayuga Inlet. Additional traffic calming measures are required to mitigate volume and speed impacts on area neighborhoods. The GEIS

identifies a typical street cross section and necessary area circulation to encourage bicycle and pedestrian circulation and to facilitate service by public transit. These features, as well as the anticipated mixed land use, serve to minimize traffic impacts by encouraging internal trips, transit use, and off-peak travel.

Daily Life

Noise generated by development of the area is primarily related to short-term construction activities. No significant long-term noise and impacts are expected.

Utilities

Decrease in the available capacities of water and sewer systems as the result of the area's development was identified as an impact, along with the costs to develop the additional infrastructure required. These impacts are mitigatable through user fees, with the additional infrastructure required a positive impact as the necessary improvements could be made to existing utilities.

Solid Waste

Adoption and implementation of the Plan is not expected to have any substantial adverse impacts on solid waste resources.

Plants and Animals

No significant ecosystems, other than Negundo Woods which will be preserved as substitute parkland, were identified within the study area. Adoption and implementation of the Plan is not expected to have any substantial adverse impacts on plant and animal resources.

Cultural Resources

No significant cultural resources (historic or archeological) were identified within the study area. Adoption and implementation of the Plan is not expected to have any substantial adverse impacts on cultural resources.

Community Character

The retail market analysis concluded that potential development in Southwest Ithaca would not have a blighting influence on downtown Ithaca. In the worst case scenario, downtown would experience net sales losses of 5 percent resulting in an additional 17,900 square feet of vacant space. It is, however, considered unlikely that sales losses would be concentrated in individual businesses resulting in such vacancies. Rather it is likely that sales losses in the range of \$7 to \$9 per square foot would be spread over a number of businesses. Recommended measures to mitigate the increased competitive pressures of future retail development in southwest Ithaca include continued evolution of downtown retailing to focus on specialty goods and superior customer service not available from mass merchandisers. Comprehensive efforts in business retention/recruitment; marketing and promotions; expanding sales from visitors and new shoppers attracted by the new retail development; as well as improving signage and the overall physical environment downtown are also recommended.

Expected employment and population growth as a result of new development are expected to be moderate and no mitigation is necessary. Additional service costs for schools, roads, utilities and

public services are expected to be substantially less than anticipated additional property and sales tax revenues. Such new revenues can be used to support and enhance city services improving the quality of life in the city's neighborhoods and strengthening the viability of the city as a whole.

1 Proposed Action

1.1 Background and History

In January 1992 the City of Ithaca Common Council passed a resolution calling for creation of a committee to develop recommendations for land use, zoning, and circulation for Southwest Park. Shortly after it began to meet, the committee expanded its study area to include not only Southwest Park, but also adjacent areas south of Clinton Street, east of the flood control channel, and north and west of Meadow Street and Elmira Road. The Southwest Area Land Use Plan (Plan) and Generic Environmental Impact Statement (GEIS) study area are shown on Figure 1. The area encompasses approximately 381 acres of which approximately 160 acres are potentially available for development. In addition there are approximately 60 acres of undeveloped land (± 25 acres in the study area plus ± 35 additional acres owned by the City) that have been designated as substitute parkland in conjunction with the alienation of Southwest Park.

Table 1-1 summarizes the parcel designation, size, owner, and tax parcel number of undeveloped land in the GEIS study area. Parcels are shown on Figure 1.

TABLE 1-1
PROPERTY & OWNERSHIP LIST
UNDEVELOPED LAND IN THE GEIS STUDY AREA

Parcel Name and Letter Designation	Acreage	Owner	Tax Parcel #
A. Southwest Park	59.94	City of Ithaca	119.-1-2
B. Other City Land	6.62	City of Ithaca	96.-2-5.12
C. Cherry Street Extension	10.27	Rueben and Milton Weiner	100.-2-1
D4. Rail Adjacent Undeveloped Land	8.0	Conrail	96.-2-5.11
E1. Former Dump	21.55	Rueben Weiner	101.-1-1.1
E2. Former Dump	1.49	Rueben Weiner	101.-1-1.2
E3. Former Dump	36.07	Rueben and Milton Weiner	118.-1-1
F1. Levee Parcel	4.87	Rueben and Milton Weiner	130.-1-1
F2. Levee Parcel	17.96	Tompkins County	126.-1-2.2
F3. Levee Parcel	15.59	Widewater	127.-1-2
F4. Levee Parcel	0.32	Vasilios and Ruth Zikakas	131.-1-2
F5. Levee Parcel	4.23	Widewater	131.-1-1
F6. Levee Parcel	16.16	City of Ithaca	127.-1-1

SOURCE: City of Ithaca; Clark Patterson Associates

The Plan was initially completed in 1994 and amended in 1998. The recommendations of the 1998 Plan are as follows:

- Alienation of Southwest Park and purchase of substitute parkland along the Cayuga Inlet with access provided from Elmira Road.

- Proceeds from the sale of Southwest Park to be utilized for acquisition of parkland and capital improvements in existing parks.
- Preservation of the rights-of-way for two roadways to serve the area to be developed in the southwest. The likely north-south right-of-way was shown as extending from Taughannock Boulevard to the existing Southwest Park access drive and the east-west right-of-way entering from Elmira Road in the vicinity of the power pole right-of-way and continuing to just east of the Conrail tracks.
- Rezoning of undeveloped lands in the study area to allow commercial, office, light industrial or residential use.
- Expansion of the Cherry Street Industrial Park to include the parcel to the south.
- The 1998 addendum also included expanded guidelines so that potential development encouraged by the Plan would be:
 - buffered from existing and proposed residential and recreational uses;
 - subject to design guidelines covering landscaping and retention of natural areas, provision of safe pedestrian, bicycle, and vehicle circulation, and building design and quality; and,
 - identifying mitigation of off-site impacts, particularly impact of traffic increases on nearby residential neighborhoods and the potential for increased storm water pollutant loading.

A public information session on the Plan was held April 6, 1997. On May 6, 1998 the Common Council was designated as lead agency for State Environmental Quality Review Act (SEQRA) review of Plan adoption. On the same day a public hearing on the Plan was held and the Ithaca Common Council resolved to file a positive declaration indicating that the adoption of the Plan might have a significant adverse environmental impact and a GEIS should be prepared. Agency and public scoping sessions were held on June 1, 1998. The GEIS scope was finalized on November 4, 1998 and is included in Appendix A.

1.2 Public Need of the Proposed Plan

The land designated as Southwest Park encompasses the City's largest single undeveloped parcel. Since 1971, a number of planning studies have been completed to evaluate the land's potential as a park versus its potential for other land uses. All previous studies indicated that all or part of Southwest Park should be alienated and used for non-park purposes. The previous section documents the background, history, and recommendations of the Southwest Area Land Use Plan. The public purpose of planning efforts such as the Plan proposed for adoption include:

- Providing a public forum to discuss, evaluate and select a comprehensive vision for the future of the area;
- Developing a coordinated approach to land use so that individual private investments and targeted public investments can be directed toward a common vision;
- Creating text and graphics to communicate the selected vision to others

1.3 Objectives of the Project Sponsor

The City of Ithaca in seeking adoption of the Plan is intent upon appropriately guiding land use in southwest Ithaca to benefit the community as a whole. To this end, the Plan recommends taking advantage of the area's assets with regard to location and parcel size to accommodate primarily non-residential development that will contribute to the City's revenue stream. The land use recommendations also include provision of parkland and recreational facilities and flexibility to accommodate mixed use development including residences if there is market support for such projects. At the same time, the City will continue its efforts to improve and strengthen existing City neighborhoods.

The City of Ithaca intends to recover the costs of off-site traffic and storm water improvements and other possible mitigation measures necessary to mitigate the impacts of development in the Southwest Area. It is recognized that no single project may trigger the need for certain off-site improvements, but that the collective impacts of multiple projects may. The City intends to develop a formula that equitably distributes the cost of the off-site improvements required due to the cumulative impacts of multiple projects in the Southwest Area. The formula will likely be based on the degree to which each project triggers the requirement for the mitigation measure. For example, a project that contributes 10% of the demand for a particular off-site improvement may be required to pay up to 10% of the cost of the improvement. The City may hold such contributions in escrow until the improvement is required. The formula will likely require a repayment to the applicant by the City if the improvement is not constructed within a specified period of time. The creation of this formula is not intended to relieve developers of their responsibility for mitigating on- and off-site impacts that are the direct result of the specific project.

Similar to the above, the City intends to recoup its costs in creating this generic environmental impact statement through a formula that distributes such costs among the new development that occurs as a result of this Plan.

1.4 Benefits

Adoption of the Plan and development would result in the following benefits:

- Stabilization or increase in City sales and property tax revenues;
- Development of a multi-modal transportation link between West Hill and the Route 13 commercial corridor and Buttermilk Falls State Park;
- Opportunity for the City to maintain or enhance its competitiveness within the region as a desirable location to live, work, shop and recreate;
- Job creation;
- Creation of substitute parkland;

1.5 Components of the Action

This Draft Generic Environmental Impact Statement (Draft GEIS) addresses the potential impacts of the adoption and implementation of the Southwest Area Land Use Plan (Plan). A

related action to be considered at this time is acquisition or official mapping of proposed transportation rights-of-way.

1.6 Location, Design and Layout

As indicated previously, the location and geographic boundaries of the Southwest Area Land Use Plan encompass approximately 381 acres as show on Figure 1. The Plan recommendations however, focus on the land use for undeveloped properties in the study area. Table 1-1 summarizes the six hypothetical land use/scale alternatives that are analyzed in this Draft GEIS.

TABLE 1-1
LAND USE AND SCALE ALTERNATIVES

Alternative	Overall Size (sq.ft.)	Land Use Mix			
		Retail (sq.ft.)	Office (sq.ft.)	Light Industrial (sq.ft.)	Residential (units)
Alt. 1	1,050,000	600,000	250,000	200,000	--
Alt. 2	600,000 + 600 units residential	400,000	100,000	100,000	600 units residential
Alt. 3	500,000	500,000	--	--	--
Alt 4	750,000	500,000	250,000	--	--
Alt. 5	1,000,000	800,000	200,000	--	--
Alt. 6	1,250,000	1,000,000	250,000	--	--

Figures 2 through 7 show hypothetical concept plans indicating potential design and layout of each of the six alternatives. It is unlikely that actual development will closely resemble any of the hypothetical concept plans. Rather the purpose of the concept plans, particularly Figure 7 showing Alternative 6, is to define the impacts of potential development and to establish acceptable impact thresholds. The actual size, mass, design and layout of individual buildings and parking areas will be guided by the impact thresholds established in the remainder of this document and the zoning and design guidelines to be adopted following Plan adoption. The concept plans do however, portray the intended layout of circulation and drainage elements to assure coordinated development with minimal impacts. Any proposed alteration of such circulation and drainage elements must be supported with clear documentation that it will result in no greater adverse impacts. Such documentation must examine impacts following development of the individual site in question, and, in conjunction with potential full build-out of the area.

1.7 Permits and Approvals

The following Table 1-1 summarizes agency permits and approvals that may be required in the course of adoption and implementation of the Plan.

TABLE 1-1
PERMITS AND APPROVAL REQUIREMENTS

Agency	Permit or Approval
City of Ithaca Common Council	Plan Adoption
	Zoning Amendments
	Adoption of Design Guidelines
	Alienation of Southwest Park
	Purchase of Substitute Parkland
	Capital expenditures for City parks
	Purchase of land for expansion of Cherry Street Industrial Park
	Lease of land in expanded Cherry Street Industrial Park
	Accept dedication of roads and public utility infrastructure
	Approval of traffic calming measures
City of Ithaca Planning Board	Subdivision and site plan approvals
US Army Corps of Engineers	401 Water Quality Certification and approval of Wetland Mitigation Plan
	404 Clean Water
	Filling in floodplain
New York State Department of Environmental Conservation (NYSDEC)	Easement for Black Diamond Trail
	SPDES permit
NYS/Tompkins Department of Transportation	Highway work permit
Tompkins County Planning Board	Referral of Plan amendments, rezoning, and special use permit, variance, site plan and subdivision applications for lands within 500 feet of a municipal boundary, a farm operation in an agricultural district, or a county or state highway, park, drainage channel, or public building
New York State Assembly and Senate	Southwest Park alienation

2 Environmental Setting, Impacts, and Mitigation

This chapter describes the existing environmental setting at, and in the vicinity of, the Southwest Area Land Use Plan study area, and identifies potential impacts as a result of the Plan's adoption. Mitigation of the identified impacts are then assessed. Detailed discussions of specific elements of the environmental setting are included in referenced appendices.

2.1 Natural Features

The study area encompasses approximately 381 acres of the southwestern portion of the City. The natural features of the study area are described in this section.

The study area is located in the southern end of the Cayuga Inlet valley, approximately two miles south of Cayuga Lake, the longest of the Finger Lakes. The valley is a steep-sided, deep U-shaped valley, formed by glacial scouring of bedrock. Typical of other Finger Lake valleys, the inlet to the Cayuga Lake valley is in the southern end.

The study area is located entirely within a relatively flat area of the Cayuga Inlet's alluvial plain. The plain is approximately 3,000 feet wide, at an elevation of approximately 380 to 400 feet, less than 20 feet above the Cayuga Lake level. Just outside the study area, the valley walls rise sharply to an elevation of over 1,000 feet within one mile of the site. A United States Geological Survey (USGS) topographic quadrangle map (Ithaca West, 1976) is presented on Figure 8.

Streams originating in the hills above the valley have extremely high erosive forces due to the steep gradients and erodable soils. These streams incise the bedrock valley walls, forming gorges, including Buttermilk Falls, adjacent to the study area. Once they reach the flatter valley floor, however, the streams lose their erosive force, and deposit their sediment load in alluvial plains on top of bedrock. The southern end of the Cayuga Lake valley is filled primarily with sediments from the Cayuga Inlet, along with sediments from other minor tributaries to the valley (Fall, Cascadilla, Six Mile, and Buttermilk Creeks). Since the retreat of the last glaciers approximately 10,000 years ago, over 400 feet of sediments have accumulated in the alluvial plain beneath the study area.

The Cayuga Inlet alluvial plain has been modified to control flooding. The Flood Relief Channel was also built, cross-cutting the middle of the study area. In the late 1960's, the Army Corps of Engineers modified the Cayuga Inlet channel, straightening the channel and building a levee on the east side of the channel. In addition to these measures, several parts of the study area (Southwest Park, former dump area, Cherry Street) have been artificially filled over the past century.

Although these measures are effective in controlling the more frequent flood events, several portions of the Plan area are within the 100- and 500-year flood zones. Figure 9 depicts the Flood Insurance Rate Map (FIRM) in and around the study area as prepared by the Federal Emergency Management Agency (FEMA). Detailed discussion of the flood conditions of the study area presented in the drainage study, presented in Appendix C and further discussed in this Section.

2.1.1 Soils

The surface soils developed in the study area are typical of alluvial plain soils. The soils survey (Tompkins County Soil Survey, 1965) describes the natural soils in the area as primarily Eel silt loam, with minor occurrences of Wayland and Sloan silt loam along the natural Cayuga Inlet channel. A small portion in the southern end of the Study area is Genesee silt loam. Figure 10 presents a soils map of the Plan area, based upon the soils survey map.

The Eel silt loam soil series (Em) is characterized by moderately well drained medium-textured, deep soils. The soils are formed in recent alluvium in floodplains. Soil mottling, indicative of high water table and/or prolonged wetness, is a characteristic of Eel soils. Eel soils are typically located in areas with a stream-controlled water table, and as such are classified by the Natural Resources Conservation Service (NRCS) as a soil with potential inclusion as a hydric (poorly-drained) soil. The substratum of Eel soils commonly contains layers of gravel, sand, and silt.

Wayland and Sloan silt loam soil series (Ws) are characterized by deep, poorly drained medium-textured soil, formed in recent alluvium. These series are NRCS-classified hydric soil. The series characteristics are similar to the Eel soils, generally located closer to the stream banks. The organic content of the soil is high.

The Genesee silt loam (Gn) consists of moderately well drained medium-textured, deep soils formed in recent alluvium. These soils are typically mapped in the higher positions within the floodplain, above the Eel and Wayland series. Other characteristics are similar to the Eel series.

The higher portions of the alluvial valley along Elmira Road are described in the soil survey as “made land, (Mc)”. This indicates the area has been filled and/or reworked significantly with no specific soil type evident.

2.1.2 Surface Geology

Lawson (1977) prepared a surface geology map of the Cayuga Inlet valley, describing the surface geologic features within the study area. The majority of the study area is mapped as undifferentiated artificial fill (along Elmira Road), landfill (former dump and parts of Southwest Park), and spoil materials (Cherry Street extension, levee, and a portion of Southwest Park). Of the areas described under natural conditions, the majority of the area is described as lacustrine (lake) deposits. These deposits are typically fine-grained materials developed on alluvial plains. These deposits are typically 40 feet thick, with increasing thickness northward. Marsh deposits are also described across the Inlet channel, just outside the study area. The southern portion of the levee area is described as deltaic and alluvial fan deposits, roughly corresponding to the area mapped as the Genesee soil series. The lacustrine and marsh deposits likely underlie most of the artificial fill areas. More detailed analysis of fill areas is found in Section 2.4.

2.1.3 Impacts

The adoption and subsequent implementation of the Southwest Area Land Use Plan will result in insignificant impacts to the natural features within the study area. Changes in elevation of the

study area to mitigate flood concerns will not significantly alter the existing slopes. Landscape berms and drainage swale construction will not significantly alter the topography of the site.

Topsoil would be stripped, disturbed and/or buried as a result of filling and grading potentially required for development under the alternatives presented. Erosion and surface water siltation could occur as a result of topsoil stripping and/or removal.

Development in the Plan area could also result in soil and subsurface material consolidation and compaction from the weight of the buildings and infrastructure.

2.1.4 Mitigation of Impacts

Topsoil from areas that are to be developed should not be stripped until a site development plan is approved. Topsoil should then be stockpiled on-site and used in appropriate landscaping development. Appropriate erosion control measures should be employed to minimize impacts.

Impacts resulting from the poor engineering conditions of the subsurface materials will be accounted for and mitigated in appropriate foundation design for each specific development. Mitigation could include foundation piles, mats, pre-loading, etc., dependant upon the specific development's foundational requirements.

2.2 Land Use and Zoning

The study area includes approximately 381 acres of land in the City's southwest corridor. Land use patterns in the study area have changed over time to include a mix of residential, industrial, public/park and commercial uses along with large tracts of undeveloped land. Figure 11 presents existing land use in and adjacent to the study area. Table 2-1 below lists the undeveloped parcels within the study area.

TABLE 2-1
UNDEVELOPED PARCEL WITHIN THE STUDY AREA

Name (Parcel Designation)	Acreage
Southwest Park (A)	59.94 Acres
Other City Property (B)	6.62 Acres
Cherry Street Extension (C)	10.27 Acres
Conrail (D4)	8.0 Acres
Weiner (E1 through E3)	59.11 Acres
Levee (F1 through F6)	59.13 Acres ¹
Total Undeveloped Lands	203.07 Acres

¹Includes 13.8 acres currently utilized as Tompkins County solid waste/recycling facility and 25 acres designated for substitute parkland.
Source: City of Ithaca; 1999

Nate's Floral Estates represents the only concentration of residential development within the study area. There is a single residence off Elmira Road and south of the flood control levee. Industrial land uses include the County's Recycling and Solid Waste Center off Commercial

Avenue and the City-owned industrial park along Cherry Street. The eastern border of the study area is developed with commercial land uses dominated by large retail stores (Tops, K-Mart and Wegmans stores).

In 1975, the City adopted a Zoning Ordinance, Zoning Map and District Regulations Chart to provide a systematic way to guide land use and growth. In addition to specifying the type of development permitted within a particular area, the zoning regulations established construction standards for various dwelling and commercial structures. Current zoning for the study area is reflected on Figure 12 and includes the following zoning district types: I-1 Industrial, MH-1 Mobile Home, B-5 Service Business, P-1 Public and Institutional, and FW-1 Floodway Zone. Surrounding zoning districts include several other residential and business designations. Table 2-2 provides more detailed information regarding zoning for the study area parcels. The discussion of permitted primary uses is condensed from the Section 325-8 District Regulations Chart.

Note that the City's zoning map does not directly correspond to the parcel base map. Table 2-2 serves to combine the two by providing a description of the primary permitted uses within the undeveloped lands identified by parcel as well as for the existing developed lands within the study area.

TABLE 2-2
STUDY AREA ZONING

Zoning District	Where Mapped	Permitted Primary Uses
<i>Study Area</i>		
P-1 Public and Institutional	Southwest Park (A), Other City Land (B)	Public Recreation; Public and semi-public institution whose purpose is education; and any municipal public buildings, facilities and functions.
MH-1 Mobile Home Park	Weiner Properties Bordering Relief Channel (E1-4)	Mobile home park; mobile home display and sales.
B-5 Service Business	Lands bordering Elmira Road Levee sites F1, F4	Any use permitted in B-4: including business or professional office; funeral home/mortuary; bank or monetary institution; office of government; schools; retail store; restaurants, fast food establishments, tavern; club, lodge; confectionery, millinery, dressmaking; theatre, bowling alley; hotel/motel; gasoline station, garage storage for motor vehicles; service station; printing, welding, plumbing, heating, welding or similar shop.
I-1 Industrial	Cherry Street (C), Commercial Ave. Levee Parcel F5, F6	Any use permitted by B-5 with the exception of dwelling units. Other permitted uses include industrial, warehousing, wholesaling, storage and handling of bulk goods (with the exception of rubbish), lumberyards, transfer station for recyclable materials and agriculture.
FW-1 Floodway Zone	Portions of Levee Parcels F2, F3	Public and private recreation subject to provisions of 325-27. No buildings allowed.
<i>Adjacent to the Study Area</i>		
R 1, R 2, R 3 Residential	Areas west of the Flood Control Channel and along Spencer Street	Residential areas starting with single family detached units (R 1). R 2 allows of single family and two family dwellings. R 3 allows for single family, two family, multiple dwelling, rooming or boarding house, cooperative households, fraternity, sorority, dormitory, garden apartment, nursery school, nursing home.
B 2a , 2b and 2c General Business	Various locations east of Elmira Road, areas along West State Street	Any permitted use in R 3 as well as business or professional office; funeral home/mortuary; bank or monetary institution; office of government; schools; retail store; restaurants, fast food establishments, tavern,; club, lodge; confectionery, millinery, dressmaking; theatre, bowling alley; hotel/motel.
B-4 Service Business	Area west of South Meadow Street	Any permitted use in B 2: business or professional office; funeral home/mortuary; bank or monetary institution; office of government; schools; retail store; restaurants, fast food establishments, tavern; club, lodge; confectionery, millinery, dressmaking; theatre, bowling alley; hotel/motel; as well as gas station, service station; printing, welding, plumbing or similar shop.
B-5 Service Business	Area north of Elmira Road and east of State Route 96/34/13	Any use permitted in B-4: including business or professional office; funeral home/mortuary; bank or monetary institution; office of government; schools; retail store; restaurants, fast food establishments, tavern; club, lodge; confectionery, millinery, dressmaking; theatre, bowling alley; hotel/motel; gasoline station, garage storage for motor vehicles; printing, welding, plumbing or similar shop.
P-1 Public and Institutional	South of Wood Street	Public Recreation; Public and semi-public institution whose purpose is education; and any municipal public buildings, facilities and functions.

Source: City of Ithaca Zoning Ordinance

Zoning regulations also dictate lot size, parking, building height, lot coverage and yard dimensions permitted for each zoning district. Table 2-3 outlines some of the current requirements for lands in and adjacent to the study area.

TABLE 2-3
SUMMARY OF LOT REQUIREMENTS IN STUDY AREA AND ADJACENT AREAS

Zoning District	Minimum Lot Size		Max Building Height		Maximum Coverage
	Square Feet (SF)	Width at Street Line	Stories	Feet (Ft)	
Study Area					
P-1 Public and Institutional	3,000 SF	30 ft	None	None	35%
MH-1 Mobile Home Park	Park -5 acres Lot-5,000 SF	50 ft	4	40	50%
B-5 Service Business	3,000 SF	40 ft	4	40	50%
I-1 Industrial	5,000 SF	50 ft	4	40	50%
FW-1 Floodway Zone	3,000 SF	30 ft	N/A ¹	N/A ¹	N/A ¹
Adjacent to the Study Area					
R 1, R 2, R 3 Residential	10,000 SF	75 ft	3	35	20-25%
B-2a , 2b and 2c General Business	2,500 - 20,000 SF	25 – 40 ft	4-6	40-70	50% (75% when adequate off street parking available)
B-4 Service Business	3,000 SF	40 ft	4	40	50%
B-5 Service Business	3,000 SF	40 ft	4	40	50%
P-1 Public and Institutional	3,000 SF	30 ft	None	None	35%

¹ Buildings not allowed in Zoning District FW-1
Source: City of Ithaca Zoning Ordinance.

Under existing zoning regulations, incremental development may lack consistent design and layout characteristics that may create a less visually unified landscape. Existing zoning allows for building lot coverage to reach up to 50 percent with little guidance with respect to the provision of landscaping and buffers.

2.2.1 Impacts

The Southwest Area Land Use Plan is intended to guide future development in the study area. To evaluate the degree to which the Plan would affect the study area, six possible land use scenarios were investigated. The land use alternatives vary in size and land use mix. In all cases, portions of parcels F2, F3 and F6 would be designated as substitute parkland and would, therefore, be permanently preserved. The six land use scenarios are summarized in Table 2-1

TABLE 2-1
LAND USE ALTERNATIVES

Alternative	Overall Size (SF)	Land Use Mix			
		Retail (SF)	Office (SF)	Light Industrial (SF)	Residential (units)
Alternative 1	1,050,000	600,000	250,000	200,000	---
Alternative 2	600,000 + 600 units residential	400,000	100,000	100,000	600 units residential
Alternative 3	500,000	500,000	---	---	---
Alternative 4	750,000	500,000	250,000	---	---
Alternative 5	1,000,000	800,000	200,000	---	---
Alternative 6	1,250,000	1,000,000	250,000	---	---

Each of the above land use alternatives would differ in their impacts. Table 2-2 summarizes the land use impact of each alternative. All six alternatives include parking lot and foundation landscaping equal to 12 percent of individual site acreage. Landscape buffers, community plaza, and designated drainage ways are incorporated into the six alternatives.

TABLE 2-2
SUMMARY OF LAND USE IMPACTS BY LAND USE ALTERNATIVE

Alternative	Building Acreage	Parking Lot Acreage	Road Infrastructure Acreage	Total Acres Developed	Undesignated Acreage
Alternative 1	24	25	17	66	98
Alternative 2	14	20	16	50	114
Alternative 3	12	16	5	33	131
Alternative 4	17	22	17	56	108
Alternative 5	23	30	19	72	92
Alternative 6	29	37	19	85	79

¹Based on 270 square feet per space for parking and circulation
Source: Clark Patterson Associates; City of Ithaca; Trowbridge & Wolf.

In reviewing the hypothetical land use alternatives, Alternative 6 is viewed as the most intensive development scenario within the study area. As shown in Table 2-2, Alternative 6 results in the disturbance of 85 acres of land for building, parking, circulation, and roads. It also only maintains 12 percent landscaping requirement by assuming 18 percent of required parking can be shared between two or more uses. Alternative 3 would result in the least impact to study area land resources with 33 acres developed.

A significant beneficial impact to land resulting from the implementation of the Southwest Area Land Use Plan is the preservation of approximately 60 acres of undeveloped land as substitute park land, 25 acres of which are in the study area. This area would be converted to parkland and

includes portions of parcels F2, F3 and F6, which includes natural features such as wetlands, the Negundo Woods and the unchannelized portion of the Cayuga Inlet.

2.2.2 Mitigation of Impacts

Key to mitigation of the land use impacts under the alternatives presented would be the rezoning of certain portions of study area lands and the adoption of design guidelines that compliment and enhance the goals of the Southwest Area Land Use Plan. Specifically, the undeveloped lands within the study area that should be rezoned to a new “Mixed Use” district are described below and presented in Figure 13.

- 65± acres of parcels A and B currently zoned P-1 Public and Institutional
- 38± acres in parcels E1, E2 and E3, currently zoned B-5 (Service Business) and MH-1 (Mobile Home Park)
- 5 ± acres of Industrial zoning on parcels F-5 and F-6

In addition to the parcels to be rezoned to “Mixed Use”, the ±25 acres of FW-1 Floodway Zone (portions of parcels F2, F3 and F6) should be rezoned as P-1 Public and Institutional.

The “Mixed Use” zoning designation would allow for retail and office development as well as the potential for residential development in the study area. The lot requirements are expected to be consistent with the B-5 Service Business designation. Current zoning regulations restrict residential development in the study area and allow construction of buildings up to four stories in height. Ultimately, the rezoning to the new “Mixed Use” designation would allow market forces to more flexibly direct the type and pace of development in the study area.

A series of draft design guidelines have been developed for the study area and would play a large role in mitigating land use impacts. The design guidelines encourage development, contributing to the City’s unique character. The design guidelines supplement existing site plan review criteria with more specific interpretation for the study area. Highlights of the new design guidelines are described below.

Streets, pedestrian and bicycle travel

In addition to the standards posed by the zoning regulations, the draft design guidelines address site elements such as a multi-modal transportation system to accommodate motor vehicles, pedestrians, and bicyclists. The guidelines require 11-foot vehicular travel lanes, 5-foot bikeways, 10-foot tree lawn buffers and 8-foot pedestrian paths. Figure 14 presents a cross section of the proposed street system. The bikeways and pedestrian walkways are to be separate and the sidewalks, bikeways and transit routes would link into existing and proposed City systems. A boulevard cross section would be similar except that a 10-foot planted island would separate the traffic lanes. There would also be a focus on the use of native stone where culvert, bridge abutment and other drainage system elements are visible to the public.

Site development, parking and signage

The design guidelines enhance site considerations presented in the zoning regulations by encouraging developers to provide for a minimum of 12 percent of the gross site area as

landscaped areas. Landscape areas required for vegetative buffers or drainage easements are not considered part of the 12 percent landscape requirement. Landscaping should be distributed throughout the parking area to provide maximum visual and environmental benefit. In general, parking should be designed to provide easy safe access to buildings and, where possible, developers should consider shared parking allowances.

The draft design guidelines state that signage should conform to local sign ordinances. Outdoor lighting should be scaled for comfort of pedestrians but provide adequate illuminations for safety. Freestanding light poles should not exceed 20 feet in height and have sharp cut-off luminaires to reduce off-site light “spillage.”

The draft design guidelines suggest the type of trees, shrubs and groundcovers appropriate for the access roads, landscaped areas around buildings and landscaped areas around parking lots. Selections appropriate for areas with varying drainage attributes are also provided.

Parks, greenways and buffers

The guidelines call for continuous, uncompromised public access along the flood control channel. Vegetative or structural buffers should be provided for existing residential areas and parks.

In addressing site development concerns, the design guidelines recommend the creation of adequate drainage swales, which results in the formation of a new series of wetlands. Wetlands are to be retained or replaced as part of site plan development when practicable. For more information on mitigating impacts to on-site wetlands see Section 2.3.3.

Storm Water Drainage

Alterations in area drainage patterns are expected to result from retail, office and residential development in the study area. The design guidelines provide mitigating measures with respect to drainage issues. Drainage issues are more fully addressed as part of Section 2.3. In brief, water quality and storm water management would conform to current NYSDEC guidelines and standards. On-site storm water drainage should flow through vegetative swales prior to discharge into the Relief Channel. Existing wetlands will be incorporated into designs where feasible and appropriate.

Architectural character

Architectural characteristics should include but are not limited to:

- Commercial buildings that would have primary structural materials limited to masonry, including brick, stone and block;
- A “watercourse” of concrete or masonry on the base of the building;
- Structural columns expressed as masonry pilasters;
- Recessed primary building entrances; and,
- Windows provided for display on the primary building façade.

2.3 Water Resources

This section describes the water resources within the study area, including wetlands surface water and ground water. The potential impacts and mitigation resulting from adoption of the Plan are also addressed.

2.3.1 Wetlands

Sometimes referred to as marshes, swamps or bogs, freshwater wetlands are important resources. Wetlands provide additional protection against flooding and serve as reservoirs for storm water and snow melt events. Wetlands also provide habitat for specific plants and animals. To classify an area as a wetland, three essential components must be present including wetland hydrology, hydrophytic vegetation and hydric soils.

State and federal agencies including the NYSDEC and the United States Army Corps of Engineers (ACOE) regulate wetlands. In New York State, the NYSDEC has jurisdiction over wetlands 12.4 acres in size or greater. All other wetlands fall under the jurisdiction of the ACOE. There are no wetlands of 12.4 or more acres regulated by the NYSDEC in the study area. Several areas of the study area have been identified as meeting ACOE criteria for delineation as a wetland. These areas are located in Southwest Park, the levee area, and the Cherry Street extension, as shown on Figure 15. Many of the existing study area wetlands formed as the result of human activity including digging of ditches, drainage canals and filling activities that impeded natural drainage features.

In 1994, a wetland delineation report was prepared for the Southwest Park, with the ACOE providing jurisdictional determinations in 1995. Approximately nine acres of wetlands ranging in size from 0.01 acres to 2.87 acres were delineated within the Southwest Park, as shown on Figure 15.

Wetlands within the levee parcels were delineated in 1998. Approximately 1.3 acres were delineated within six areas of the levee parcels, the largest being 0.64 acres.

Parcel C, south of the existing Cherry Street industrial site also contains three small wetlands totaling 0.917 acres in size. Size and class of individual wetlands are summarized in Table 2-1.

TABLE 2-1
WETLANDS DELINEATED WITHIN SOUTHWEST AREA LAND USE PLAN

Location	Size (Acres)	Delineated By (Date)
Southwest Park A	0.17	Stearns & Wheler, 1994
Southwest Park B	0.02	Stearns & Wheler, 1994
Southwest Park C	0.08	Stearns & Wheler, 1994
Southwest Park D	0.01	Stearns & Wheler, 1994
Southwest Park E	0.30	Stearns & Wheler, 1994
Southwest Park G	0.84	Stearns & Wheler, 1994
Southwest Park H	2.27	Stearns & Wheler, 1994
Southwest Park I	0.07	Stearns & Wheler, 1994
Southwest Park J	2.87	Stearns & Wheler, 1994
Southwest Park K	1.45	Stearns & Wheler, 1994
Southwest Park L	0.02	Stearns & Wheler, 1994
Southwest Park M	0.01	Stearns & Wheler, 1994
Southwest Park N	0.27	Stearns & Wheler, 1994
Southwest Park O	0.21	Stearns & Wheler, 1994
Levee Parcel A	0.64	TES, 1999
Levee Parcel B	0.20	TES, 1999
Levee Parcel C	0.41	TES, 1999
Levee Parcel D	0.12	TES, 1999
Levee Parcel E	0.04	TES, 1999
Levee Parcel F	0.03	TES, 1999
Levee Parcel G	0.04	TES, 1999
Cherry Street A	0.12	Wesley, 1999
Cherry Street B	0.02	Wesley, 1999
Cherry Street C	0.45	Wesley, 1999
Cherry Street D	0.32	Wesley, 1999
Total	10.98 Acres	

2.3.2 Impacts

The adoption of the Southwest Area Land Use Plan could result in one of several land use scenarios allowing development of study area lands containing delineated wetlands. The rezoning of the Southwest Park area would allow development including buildings, parking and other infrastructure. These activities could require filling in the wetland areas to accommodate drainage, flood, and foundational concerns. The rezoning of a portion of the levee area as substitute parkland would result in the preservation and/or enhancement of a portion of the wetlands within the new park confines.

2.3.3 Mitigation of Impacts

Wetlands within the study area are to be protected and retained as part of any site plan development, when practicable. Wetlands meeting ACOE jurisdictional criteria not protected will require mitigation per ACOE permit. Mitigation would include replacement wetlands reconstructed on-site whenever practicable. Wetland mitigation may be achieved by expanding

or enhancing existing wetlands and /or incorporated into project-related drainage easements or buffers. Appropriate buffer and wetland plant species are to be listed in the draft design guidelines.

2.3.4 Surface Water

As shown on Figure 16, the study area is located in the alluvial plain of the Cayuga Inlet (NYSDEC Waters Index # ONT 66-12-P-296-75), approximately 1½ miles south of Cayuga Lake. The study area is east of the Inlet between the Inlet's confluence with Buttermilk Creek (ONT 66-12-P-296-75-10) and Six Mile Creek (ONT 66-12-P-296-75-5). The overall watershed area of the Inlet is approximately 143 square miles.

Abrupt slope change from steep to flat sloping channels where tributary streams enter the Inlet alluvial plain result in conditions where flooding can be frequent. This is the result of flatter sloping channels that cannot convey as much flow as the steeper channels and therefore, have had a tendency to overflow their banks during high runoff conditions. To mitigate these flood concerns, several measures have been taken.

Several of the creeks that enter the alluvial plain and the Cayuga Inlet have been modified within the City limits for the purposes of flood protection and erosion control including channelization and concrete lining. The Cayuga Inlet underwent its largest flood control project in the 1960's at which time it was relocated and a flood control levee was constructed. The Flood Control Channel and levee work together to direct stream flows into the improved Cayuga Inlet. The Relief Channel is an additional improved channel that allows floodwaters to back up into this channel rather than adjacent lands.

In 1981, as part of the Flood Insurance Program, the Federal Emergency Management Agency (FEMA) completed a detailed flood study for the City including the study area. This study determined the 10-year, 50-year, 100-year and 500-year flood elevations for Cascadilla, Fall and Six Mile Creeks and the Cayuga Inlet with flood control projects in place. Table 2-1 summarizes the results of the study.

TABLE 2-1
 CAYUGA LAKE FLOOD ELEVATIONS
 CITY SHORELINE AND IN THE VICINITY OF THE STUDY AREA

Location	10-year elev.(ft)	50-year elev.(ft)	100-year elev.(ft)	500-year elev. (ft)
Cayuga Lake Shoreline	384.8	385.8	386.3	387.2
Cayuga Inlet just upstream from drop structure	390.5	393.0	394.0	396.5
Cayuga Inlet Flood Channel at the southern City limit	387.0	389.0	390.0	392.5
Relief Channel upstream end	385.5	387.0	388.0	390.0

Source: Federal Emergency Management Agency, 1981.

The majority of the study area south and west of the levee (the levee parcels) is within the 100-year flood zone. Previous investigations (Sear-Brown, 1994) concluded that although this area is within the 100-year flood zone, filling would not significantly impact the flood level or velocity, thus allowing for potential development.

While the levee protects the study area north and east of the levee from the seasonal high flows and overbank flooding of the Cayuga Inlet (with the exception of a few areas), the drainage characteristics within this area are generally considered poor given the flat slopes. A Drainage Analysis, included as Appendix B, reviewed the drainage characteristics of the area north and east of the levee in detail and concluded that the area is not graded to promote drainage or to manage it in a systematic way.

Within the study area there are a number of small drainage ditches intended to manage storm water around specific areas of use. The largest drainage ditch is located on the eastern portion of the study area. It collects runoff from a large portion of the area north of the levee parcel, and from a contributing watershed to the east. This drainage ditch discharges to the relief channel. As may be expected in poorly drained areas, wetlands are present in the study area as discussed in Section 2.3.1.

The storm water drainage analysis was completed for the area north of the levee, and is presented in Appendix B. This analysis indicated that the peak runoff rate for a 25-year storm from the study area under existing conditions is approximately 70 cubic feet per second (cfs). Measurements of the volume of runoff are also provided in terms of acre-feet where one acre-foot equals the volume of water that will cover one acre to a depth of one foot (approximately 330,000 gallons). For a 25-year storm, the existing study area yields approximately 18 acre-feet of runoff.

Because the study area is located at the downstream end of a much larger surface drainage system, storm water runoff peaks generated in the study area reach the Relief Channel

significantly ahead of the storm water peak generated by the rest of the watershed, and are smaller in volume.

2.3.5 Impacts

The volume of runoff from large storms would be greater under any development scenario when compared to existing conditions given the additional amount of impervious surfaces (roofs, parking lots, roads, etc.). To evaluate the impact of adoption of the Plan on study area drainage and storm water management systems, the maximum buildout scenario, Alternative 6, was evaluated. In addition, Alternative 4, a less intensive alternative, was also evaluated. Table 2-1 shows the results of the comparison of land use alternatives and their impact on storm water generation.

TABLE 2-1
STORM WATER PEAK FLOW AND RUNOFF RATES FOR A 25-YEAR STORM

Alternative	25-year Storm Peak Flow (cfs)	25-year Storm Runoff Volume (acre-feet)
Existing Conditions	70 cfs	18 acre feet
Alternative 4	240 cfs	31 acre feet
Alternative 6	270 cfs	36 acre feet

The concept plan for Alternative 6 allows for the construction of 1.25 million square feet of building space, with a total of approximately 85 acres of additional impervious surface. Because Alternative 6 has the greatest roof and pavement coverage, it results in the most runoff from the study area. The 25-year peak flow from the study area under Alternative 6 is 270 cfs. The 25-year runoff volume from the study area under Alternative 6 is 36 acre feet.

By comparison, Alternative 4 would include 750,000 square feet of retail and office space along with 56 acres of impervious surface. The 25-year peak flow from the study area under Alternative 4 would be approximately 240 cfs and the 25-year runoff volume from the study area would be 31 acre-feet. As indicated by the rate and volume of flow comparisons, for the same storm event, Alternative 4 produces less flow and smaller volume than Alternative 6 but the differences are not significant.

2.3.6 Mitigation of Impacts

In order to determine mitigation necessary for the drainage system components for the various alternatives, a set of design criteria was developed, based on standard practice and in discussions with the City of Ithaca.

Additionally, FEMA's National Flood Insurance Program (NFIP) criteria must be satisfied. NFIP requires that the 100-year floodway must be kept free of encroachment in order that the 100-year flood can be carried *without substantial increases in flood heights* (emphasis added). FEMA allows encroachments that limit the increase in flood heights to 1.0 foot, provided that hazardous

velocities are not produced (FEMA 1981). Any new project proposed in the study area must demonstrate via calculations that it would cause no significant increase in the 100-year flood elevation and not cause destructive water velocities.

South of the levee, development would encroach on the 100-year flood zone. One other minor area of encroachment into 100-year floodplain would occur in the Alternative 6 Concept Plan. The encroachment would be a small existing depression on the west side of the study area adjacent to the Relief Channel. At those locations, NFIP requirements apply.

Storm water management system components should be designed to have capacity to manage runoff from a 25-year storm event. Additionally, storm water quality management facilities will be designed to provide water quality treatment for the first ½-inch of runoff from a rainfall event. All finished floor elevations for buildings will be above the 100-year flood level, as determined by FEMA, to achieve appropriate drainage.

The study area presents constraints to the amount of grading that is prudent for site development. As a general guideline, site grading for drainage, roadway construction and building pad construction is to be limited to fills of approximately five feet or less. Because the land is flat, is adjacent to 100-year floodplains, and is partially on a former dump, the ability to perform extensive excavations at the study area is extremely restricted. Since the required grades would be achieved primarily by importation of earth materials, limiting the depth of fill controls both costs and environmental impacts during construction.

The City of Ithaca desires that site improvements within the study area be constructed incrementally as needed as development occurs.

2.3.7 Recommended Drainage Configuration

Because the study area is located at the downstream end of a much larger surface drainage system, it was determined that storm water detention would not be an appropriate measure to control peak runoff rates from the area. The drainage system recommended for development within the study area north of the levee meets the objectives of the design criteria. It features two drainage systems, as shown in Figure 17. The eastern system would be an extension of the Relief Channel. The first 1,300 feet upstream from the Relief Channel (that is, upstream from the north property line of K Mart) would have a channel bottom width of 80 feet with 2H:1V (two horizontal to one vertical) side slopes. The next 1,200 feet would have a channel bottom width of 30 feet with 3H:1V side slopes and the last 2,000 feet would reduce the channel bottom width to 15 feet. This last 2,000 feet would have side slopes beginning with a 3H:1V side slope up from the channel bottom, followed by a four foot level area and then a 4H:1V side slope. The last portion would be at a channel slope of 0.15 percent (1.5 feet rise in 1000 feet length).

The swale in the central portion of the study area would have a channel bottom width of 18 feet, 3H:1V side slopes up from the channel bottom, followed by a four foot level area and then a 4H:1V side slope. The channel slope would be at 0.15 percent. This swale discharges to the Relief Channel. At the discharge point into the Relief Channel, the invert of the swale would be the 25-year flood elevation in the Relief Channel, 386.3 feet. This allows a free discharge for

most ordinary storms. Only the storms in excess of the 25-year storm would result in backwater effects in the drainage swales.

The vegetated swales would receive runoff from strategically placed storm water treatment manholes, similar to the Structural Storm water Treatment System by Kistner Concrete Products, Inc. These would be placed at appropriate intervals along roadways and in parking lots. The storm water treatment manholes are to be sized to treat the first ½-inch of runoff received from a storm event, then discharge to one of the vegetated swales.

The levee parcel drainage system would contain the same components. Drainage would be directed to storm water treatment manholes, which would discharge to the existing surface drainage system, or to constructed vegetated swales, ultimately to the main flood channel of the Cayuga Inlet. Detention basins are not required because peak runoff from the site reaches the Inlet significantly before the watershed's peak flood discharge occurs.

Other recommendations for the drainage system address the Plan area's proximity to the Cayuga Inlet main flood channel and the need for ongoing maintenance of the drainage system developed.

Because the study area north of the levee is located adjacent to the main flood channel for the Cayuga Inlet, it is recommended that the site drainage configuration also include the ability to discharge into the Inlet. This would provide for an emergency relief in case free discharge to the Relief Channel is prevented due to high water there. By providing an emergency alternative discharge location, floodwater could be directed to the Cayuga Inlet flood channel in addition to the Relief Channel.

The maintenance schedule for the storm water treatment manholes would be developed over the first two years of operation. Initially, the manholes would be inspected monthly, or after a particularly severe storm event. The collected sediment in the manholes would be removed using vacuum trucks. More sediment is expected during the first year than other years due to the site development earthwork and lack of established vegetative cover. After the second year, the frequency of inspection and sediment removal would be scheduled based on the experience gained during the first two years.

The maintenance of the vegetated swales consists of mowing during the growing season and annual removal of brush, debris and sediment. The grassed side slopes of the swales should be mowed above the water line to prevent natural emergence of woody vegetation, which would reduce the flow capacity of the channel. Mowing also provides improved aesthetics.

Brush, debris and sediment removal should be performed at least annually, most likely during the dry season in August or early September. By performing this activity annually, it is considered maintenance and no additional permits or approvals are needed. If the maintenance is neglected and a channel dredging, re-shaping and/or reconstruction project becomes necessary, then the activity may require a permit from the US Army Corps of Engineers or NYSDEC. Any site development plan for the study area should incorporate access to the vegetated swales for maintenance equipment.

Historically, the Relief Channel has experienced sedimentation due to the silt loads carried by streams that discharge to it. As with the vegetated swales, the Relief Channel should also be maintained. The maintenance would include weed control and removal of brush, debris and sediment. The ability to access the Relief Channel for maintenance equipment must also be provided.

Drainage to the Relief Channel from upland areas east of and outside the Plan area has been a source of sedimentation problems in road culverts at and near the Relief Channel. Sedimentation control measures, such as check dams or siltation basins, should be implemented in the streams draining South Hill, to minimize sedimentation concerns in the Relief Channel.

2.3.8 Storm Water Quality

Non-point source pollution, such as runoff from urban areas is regulated under the National Pollutant Discharge Elimination System (NPDES). Developed portions of the study area vary in their use of infiltration, sweeping, or mechanical storm water treatment systems to minimize potential adverse water quality impacts from runoff. As described previously in Section 2.3.4, the undeveloped portions of the study area are not graded to provide for systematic management of storm water runoff, quantity or quality.

2.3.9 Impacts

The increase in impervious surfaces resulting from all land use alternatives would result in increased storm water runoff as shown in Table 2-1. The water ultimately is discharged to the Relief Channel and eventually Cayuga Lake. With the increase in storm water runoff comes the potential for increased non-point source pollution in area waterways. Typical storm water pollutants from urban areas include oil, grease, sediment, solvents, and salt. Various metals and nutrients also find their way into storm water runoff.

2.3.10 Mitigation of Impacts

As described in Section 2.3.4, a system of vegetated swales and storm water treatment manholes would be used to manage storm water quantities. These systems, together with street and parking lot sweeping, effectively minimize storm water quality impacts. The following summarizes available information on the effectiveness of proposed storm water quality mitigation measures at removing pollutants typical of urban runoff. The manufacturers of storm water treatment manholes report that treatment manhole systems exhibit an 80 percent removal rate for typical bimonthly rain fall events.

Nutrients including nitrogen and phosphorus appear in urban runoff in soluble form and are attached to sediment particles. They are removed by both the settling and infiltration action of the vegetated swales. The swales effectively allow for the nutrients to be absorbed by plants. As a general rule, the more flow a swale infiltrates or absorbs into the ground, the more nutrients will be removed.

Metals also appear both in soluble form and attached to sediment particles. Studies of heavy metals removed by swales have typically found values ranging from 20 to 60 percent of runoff concentrations. Oil and grease removal in vegetated swales occurs through bacterial action in the soil. One study found a 49 percent removal rate in a swale where the flow residence time was four to five minutes, rising to 75 percent in swale where the residence time was 10 minutes. Actual residence time in the vegetated swales would vary depending on factors including the variations in the location where runoff enters the swale. If runoff enters the swale upstream it would have a longer residence time than if runoff enters the swale from a down stream location.

Periodic sweeping of streets and parking lots also reduces pollutant loading in storm water. Regular parking lot and street sweeping removes much of the dust, grit and small gravel particles before it is flushed into storm water treatment manholes and vegetated swales by rainfall events.

2.3.11 Hydrogeologic Setting

The hydrogeologic setting of the study area has been developed from numerous geotechnical investigations prepared in the area. In addition, a report entitled Surficial and Engineering Geology of the Cayuga Inlet Valley, Ithaca, New York (Lawson, 1977) was also used to develop this setting. A cross-section of the subsurface of the study area is presented in Figure 18 and discussed in the following section.

The uppermost alluvial soils and artificial fills are in direct hydraulic connection with the Inlet and Lake. As such, the water table in these materials fluctuates with fluctuations in the Lake and Inlet levels. The saturated thickness within this layer is very thin, generally less than 5 feet thick. Ground water flow direction is controlled by the surface topography of the underlying low-permeability surface lacustrine (lake) deposits.

The upper ±50 feet of sediments in the Inlet valley generally consist of surface lacustrine deposits. These deposits are composed of silt and clay with a high organic content, sometimes classified as peat. Because they have been deposited recently (within the past 10,000 years), these deposits have not been subject to consolidation pressures and are soft, subject to consolidation. Given the fine-grained nature of this layer, it would act as an aquiclude, or barrier, to vertical ground water movement.

Shallow lacustrine deposits, approximately 30 feet thick, underlie the surface lacustrine deposits beneath the Study area. These materials differ from the overlying material in that they consist of sand and gravel, with less organic material and fines (silt and clay). Occasionally, the material is well-sorted, and would commonly be described as sand and gravel.

These deposits may be permeable enough and thick enough to support domestic yields from wells. However, the zones are not laterally extensive, nor are they under all parts of the valley, and as such, could only support a small (domestic) well.

A thick (150+ feet) sequence of ice-contact deposits underlies the lacustrine deposits. These deposits are characterized by inorganic clay, with sand and gravel. This layer was formed as materials trapped in the glacial ice were deposited as the glaciers melted.

The ice-contact deposits are low-permeability materials and would not be considered a significant aquifer, or source of substantial ground water yield. This layer is more likely to act as an aquiclude to materials below.

The lowest layer of unconsolidated material is termed the basal valley fill. This unit is highly variable in its composition, with grain sizes from clay to boulders. This layer changes abruptly from impermeable glacial till to clean sand and gravel. This material is over-consolidated as a result of compaction by glaciers and the overlying deposits.

The lower basal fill reportedly has significant zones of sand and gravel that yield significant quantities of water, likely capable of several hundred gallon per minute yields. This aquifer is confined by the overlying aquiclude, and is under significant upward (artesian) pressure. Valley floor wells tapping the sand and gravel zones within the basal unit are typically flowing at the surface. This indicates that the source of recharge to this aquifer is not from percolation or infiltration vertically downward, but from infiltration higher up the valley walls and farther upvalley toward the south, beyond the study area. Unfortunately, the sand and gravel zones are not continuous across the valley, nor are they readily locatable from the surface without expensive test drilling.

Because of its depth (over 400 feet), not many studies evaluated bedrock in the Inlet valley. The bedrock is probably shale and/or siltstone, probably highly weathered at the surface, becoming more competent with depth. Jointing and fracturing is likely. Developing significant groundwater supplies from bedrock is unlikely due to the high cost of developing deep wells and poor water quality expected.

There have been numerous geotechnical engineering studies of the subsurface conditions in the study area. These studies include: the Army Corps of Engineers Flood Control Study for the levee (USACOE, 1976); the Tompkins County Recycling and Solid Waste Center Study (Resource Associates, 1989); proposed development project on the former dump site (Benchmark Development, 1994); and the proposed development project in the levee area (Sear-Brown Group, 1994). These studies concluded that the subsurface material has poor engineering properties. Specifically, soil bearing capacities are low (in the 500 pounds per square foot (psf) range), the water content high, and consolidation significant.

2.3.12 Impacts

There would be no significant impacts on the geologic or hydrogeologic setting as a result of the adoption of the Southwest Area Land Use Plan, other than the potential geotechnical engineering issues (compaction, differential settlement, etc.). The basal fill aquifer, potentially capable of sustaining public water yields, is isolated from the surface by the lacustrine and ice contact deposits above. Recharge to this aquifer is from areas far beyond the study area, along the valley walls and further upstream to the south. Any surface pollution potentially resulting from development within the study area would not migrate downward into the aquifer, given the upward (artesian) gradient. As such, there would be no impact to this aquifer as a result of the Plan adoption or area development.

2.3.13 Mitigation of Impacts

Appropriate foundation designs, based upon specific building conditions, would mitigate the geotechnical issues identified above. Piles or other deep foundational supports that penetrate into the basal fill aquifer would essentially self-seal, given the nature of the overlying material.

2.4 Fill Areas

Several locations within the study area have a history of filling activities. Southwest Park has had several feet of construction and demolition (C&D) fill. Cherry Street extension and the Conrail parcels have undergone significant fill activities as well. Construction of the Relief Channel and the straightening of the Flood Control Channel also led to filling in these areas over the years.

However, the most significant location of fill in the study area is the former dump area on the Weiner parcels (E1-E3), once used as a former dump site. As part of this project, a study (Former Dump Site Environmental Assessment, Appendix D) was completed of the Weiner parcels, exclusive of the existing mobile home park. The purpose of this study was to:

- Characterize the types of wastes buried at the site.
- Identify the nature and extent of potential contaminants in the site soils, subsoil, ground water, and surface water.
- Quantify the significance of the level of any contaminants identified.
- Identify contaminant exposure pathways to the environment and quantify level of current releases.
- Identify the impacts of site development as a result of any identified contaminants.

2.4.1 Dump Site History

Filling activities began on these parcels as far back as 1938, based upon aerial photograph review. The first area filled appears to be just south of Clinton Street under what is now Nate's Floral Estates. Tompkins County Department of Health (TCDOH) records indicate the majority of the mobile home park is constructed on fill consisting primarily of residential and commercial wastes, along with C&D. Through 1970, the area was used as a "dump" in the classic sense for anyone's use to dispose of wastes (household, commercial, industrial). Use of the site as a landfill was not regulated by State agencies as it would be now and therefore not illegal at the time.

By 1970, landfilling ceased, with the exception of minor surface dumping, mostly of C&D wastes. The site was never formally closed by capping with a low-permeability cap, as would be required under current landfill regulations. The soil covering the wastes is relatively thin (in most cases less than one foot thick), with wastes commonly exposed at the surface. Scrub forests have

developed on the surface soils. The trees are shallow-rooted, with numerous uprooted trees with wastes entangled in the root system.

2.4.2 Field Investigations

Waste characterization involved test pits dug on a 200-foot grid across the undeveloped portion of the Weiner parcels, totaling 57 test pits. Test pit locations are shown on Figure 19. Each pit was dug until natural soils were encountered. Figure 20 presents the thickness of wastes encountered at each test pit, with waste thickness contoured.

In general, waste thickness was greatest in the northeast portion, just south of the mobile home park, with over 12 feet of wastes encountered. Wastes in this area consisted of mostly household/commercial wastes, with glass, plastic, and thick metal readily distinguished. Most other wastes had significantly decomposed beyond recognition with the exception of occasional newspapers. Newspaper dates indicate the area north of the power lines was filled after the mid to late 1960's. Wastes, consisting primarily of large concrete slabs and other C&D wastes were encountered or observed up to the edge of the Relief Channel along its entire length. Surface wastes consisted of numerous C&D dump piles, and scattered household-type debris at the surface.

Near the Conrail property to the west, waste thickness thinned to less than 3 feet or surficial wastes only. No wastes were encountered along the northern property line between Southwest Park and the Weiner parcel.

In the southern portion of the dump site, near the golf driving range, waste thickness generally ranged from 6 to 8 feet thick, up to 11 feet thick near the southern end of the dump area. No wastes were encountered along the southern edge of the site. Wastes on the western portion of the site adjacent to the Southwest Park were primarily C&D, similar to Southwest Park. The central and eastern portion of the site appeared to be more household/commercial wastes, with a large commercial-sized white good (stove, refrigerator, hot water tank, etc.) encountered at almost every location. Waste thickness was limited to less than three feet or only surficial along the Flood Relief Channel. C&D wastes were observed along the bank of the channel south of the site, up to 10 feet thick.

2.4.3 Sampling Efforts

Subsoil samples were collected at 17 locations across the site for laboratory analyses. Tables 2 through 7 in Appendix D detail the results of the laboratory analyses. These samples were collected at the interface between the wastes and natural soils. Samples were analyzed for volatile organic compounds and metals. In addition, five soil samples were analyzed for semi-volatile organic compounds.

In addition, four surface soil samples were collected across the site. Surface samples SS-1 and SS-2 were collected from beneath outfall pipes along the southern end of the site, in the Relief Channel. SS-3 was collected from a low area near the power lines at the northeast corner of

Southwest Park. SS-4 was collected from soils along the Relief Channel, which appeared to be iron-stained as the results of a former seep.

Surface soil samples were also collected from locations off of the dump area, within the study area, as shown on Figure 21. An additional six test pits on the Southwest Park parcel and one test pit south of the levee were tested. The purpose of this sampling was to establish a background (naturally occurring) level for metals in areas unimpacted by the former dump site. These background levels would then be compared to the metals levels from the subsoil beneath the dump site. Those areas of the dump site in which metal levels exceed the “background” levels would be identified as areas of concern. The impacts of developing these areas of concern can then be assessed. Background levels for the volatile organics and semi-volatile organics need not be established as they generally are not naturally occurring and have established State Standards.

Only two flowing seeps (ground water discharge points) were identified on the site along the Relief Channel. Seep 2, near grid point H-11 was flowing at a considerable rate (estimated 2 to 3 gallons per minute), while Seep 1, north of grid point H-13, was flowing at less than 1 gallon per minute. Seep 2 is likely the same seep that was sampled in 1986 by the Tompkins County Health Department. No other seepage was noted, nor staining observed, along the Relief Channel.

Three monitoring wells (MW-1, MW-2, and MW-3) were installed on the dump site. An existing monitoring well on the edge of the dump site on Southwest Park, installed during a previous drainage study completed by the City, was also utilized. These wells were sampled during this study, with the results presented in Appendix D.

Methane gas is a byproduct of waste decomposition. A methane gas survey was completed across the site. Methane gas results are presented in Table 6 of Appendix D. Methane was identified at grid locations G-4 (34 percent) and G-5 (53 percent). Methane was not identified in any other areas of the dump site.

During the field activities, all garbage encountered in the test pits was well decomposed within the upper five feet, with no putrescible wastes remaining. Without putrescible wastes, vectors such as rats, flies, seagulls, etc. would not be expected. The minor surface dumping of white goods and non-putrescible wastes would not likely attract significant vectors. There were several ground burrows (woodchucks), as would be expected in a large meadow / scrub forest.

2.4.4 Sampling Results

Review of the sampling results indicates that the subsoil near D-11 is impacted with metals (barium, cadmium, chromium, lead, mercury and silver) exceeding background levels, confirmed with a re-sampling. In addition, locations E-11 and E-12 (within 200 feet of D-11) also have lead and mercury levels above background. This area of the site should be identified as an area of concern with respect to metals contamination. It should be noted that ground water monitoring well MW-1 installed in this area did not identify significant metals in ground water. This suggests that the metals contaminants are tied up in the subsoil.

The presence of semi-volatiles was identified in the subsoil initially at G-9. Re-sampling of the subsoil at G-9 did not identify the presence of these semi-volatiles nor any related PCBs. Lead and mercury levels at this location exceeded background levels. Volatile organic compounds were identified at this location, but concentrations were below ground water standards. Given the results, the area surrounding G-9 should also be identified as an area of concern with respect to metals and semi-volatiles contamination. Again, it should be noted that ground water at MW-2 (adjacent to G-9) did not identify any significant volatile, semi-volatile, or PCB contamination, however lead and cadmium exceeded ground water standards.

Other sporadic, non-related subsoil metals contamination was identified at F-4 (cadmium) and F-5 (lead). Surface soil samples SS-3 (lead) and SS-4 (barium) also exceeded background. The levels of contamination in these areas were not extremely high, and due to the sporadic, disassociated nature of their occurrence are not considered a significant concern.

The volatile organic compound Acetone was identified in several subsoil samples. Acetone is a very soluble and volatile compound that does not persist in the environment. It is a very common compound, used routinely in analytical laboratories. The presence of acetone in soil sampling is commonly a laboratory artifact of the analytical process and its presence at the site as a contaminant is suspect.

The volatile organic compounds identified at MW-4 (2-butanone and acetone) barely exceeded State standards. Neither are persistent compounds in the environment, easily degraded and soluble. This occurrence should not present a significant concern.

The landfill gas sampling completed during this investigation encountered methane at the southern end of the site. This would indicate the wastes are still actively decaying. The presence of methane should be considered a significant concern due to the potential for methane buildup in structures overlying the wastes, presenting a potential explosive or asphyxiant hazard.

Once the site contaminants were characterized and quantified, the potential exposure pathways to the environment were assessed. Potential pathways include migration via ground water and surface water movement, volatilization to the atmosphere, or direct contact. Each of these potential routes of exposure is assessed in the following section.

The site is underlain by the low-permeability lacustrine deposits, with an upward (artesian) ground water gradient. The less permeable underlying material and the vertically upward gradient would preclude downward migration of contaminants to deeper portions of the site. Therefore, lateral migration on top of the less permeable layer within the wastes would be the primary migration pathway within the ground water regime. Discharge to the environment would be controlled by the topography of the underlying material, with discharge to the relief channel and/or the flood control channel as ground water seepage. Two flowing seeps were identified and sampled, along with ground water. None of the sampling identified significant levels of contamination discharging to the environment via ground water movement.

Volatilization of volatile organic compounds is not a concern from a toxicity standpoint as no significant levels of volatile compounds were identified on the site. However, methane gas was

identified at the site, and gas buildup as a result of gas entrapment or confinement presents an explosive or asphyxiant concern.

The surface soils on the dump site are not of concern, based upon the sampling completed. It does appear, however, that there are certain areas of the site in which the subsoil are impacted by metals contamination. As stated previously, the metals are tied up in the soils and do not appear to be migrating. Left undisturbed, the subsoil metals contamination would not present a significant environmental concern.

2.4.5 Impacts

The Environmental Site Assessment completed for the former dump site (Appendix D) concluded that the site does not present a significant threat to the environment if left undeveloped. The majority of the site is currently zoned for mobile home use, with a smaller portion zoned B-5 service business and P-1 public and institutional. Tompkins County Department of Health has denied several requests to expand the mobile home park onto the dump site, and would likely continue to deny future requests to allow residential uses on the former dump. The size and location of the B-5 and P-1 parcels also limit their marketability and ability to be developed as zoned. Therefore, it is likely that these parcels would not be developed.

Adoption of the Southwest Area Land Use Plan could result in significant development within the former dump site parcels as there would be no residential development on the dump site and the parcel configuration would be more conducive to development. Each of the potential development alternatives presented depict primarily large-scale retail development with some smaller scale office development within the dump site boundaries. In addition, the alternatives depict parking areas, drainage swales, roadways, and open space within the dump area.

The long-term impacts associated with development of the dump site occurring as a result of the Plan's adoption are primarily positive. With each alternative presented, significant filling and re-grading would be required within the dump site to meet grading and drainage criteria. This would benefit the area in the long-term, as additional clean fills would be placed, further minimizing the potential for contact with the buried wastes. Impervious surfaces (roofs, parking lots, etc.) would minimize infiltration of precipitation through the wastes, decreasing contaminant mobility.

The long-term impacts associated with the Plan's adoption would also have a positive benefit for other areas that have been filled, including the Cherry Street extension and Southwest Park parcels. The existing, unsightly, piles of C&D fill and other spoils piles on these parcels would be leveled, visually improving the area.

The only long-term adverse impact associated with development in areas of fill would be at the former dump site with the potential for methane, a byproduct of the ongoing waste decay, to be trapped beneath, and in, structures and parking lots. Currently, methane vents naturally through the permeable soils at insignificant rates. Impervious floors and parking lots as part of site

development could trap methane, allowing methane to build up to levels that may become a potential explosive or asphyxiant concern.

In the short-term, however, development of the dump site and other fill areas could present adverse impacts. Construction activities, such as clearing and grubbing of the lands, trenching as part of utility and drainage infrastructure installation, and foundation installation could present adverse impacts.

Large-scale clearing and grubbing activities could result in stripping of the soil cover over the wastes on the former dump site, thus exposing wastes at the surface. Should the site be left with the wastes exposed for long periods of time before the necessary filling occurs, dust generation then could result in wastes and possibly subsoil contaminants to be blown off site. Surface water quality impacts as a result of sediment run off, along with erosion concerns would also be impacts. Leveling and re-grading activities on the other fill areas also would have the potential for significant dust generation and surface water quality concerns.

Trenching during utility and storm water infrastructure installation on the former dump site could result in adverse impacts as wastes and subsoil could be excavated. Depending upon the necessary depth of installation, utility lines may be installed within wastes. Pipe bedding requirements, determined during specific design of these utilities, may require that large areas of wastes be removed to allow installation. Excavated wastes could not be re-buried on site and would have to be disposed of off-site in accordance with applicable solid waste regulations.

The requirements for building foundations would be developed based upon a specific building and site design. Other buildings in the area (Wegmans, Tompkins County Recycling and Solid Waste Center) have required an extensive foundation pile system, and it is likely that new development would also require significant pile systems. Piles are generally driven without significant excavation, and therefore, would not involve significant waste removal or exposure potential to subsoil contaminants. However, specific building design on the former dump site may also require large scale excavations to remove wastes deemed unsuitable as foundation material. This may result in large areas of wastes that would then have to be removed and disposed of off-site, again disposed of in accordance with applicable solid waste regulations.

Excavation of wastes for foundational or infrastructure installation requirements may also present impacts to the construction worker health and safety. Metals concentrations that exceed background have been identified on site, along with sporadic occurrences of other organic compounds.

2.4.6 Mitigation

Short-term adverse impacts associated with the Plan's adoption could result from developing fill areas. Construction activities such as clearing and grubbing activities, filling, and re-grading create the potential for erosion of soils, dust generation, and surface water quality impacts from run off. These impacts are not limited to fill areas but would apply to any development within the Plan's area.

To mitigate these short-term construction impacts in areas of fill and other areas of the site, appropriate erosion control and soil stabilization measures would be developed for each parcel as it is developed. NYSDEC State Pollutant Discharge Elimination System (SPDES) requirements, including the filing of appropriate Notice of Intent and the development of a Construction Pollution Prevention Plan, would be required to be submitted during the site plan review process for each parcel as it is developed. Each Plan should be in accordance with New York State Guidelines for Urban Erosion and Sediment Control, and include a detailed description of construction sequence and the type and location of erosion control measures to be used. Erosion control measures should include the following:

- stabilized construction entrances;
- gravel construction roadways;
- public roadway sweeping program;
- straw bales and silt fencing;
- siltation sinks and check dams;
- hydroseeding areas open for more than 14 days and all topsoil stockpiles;
- maintenance and inspection programs for erosion and sediment control measures.

Dust generation is also a potential impact to development in fill areas, along with other areas of the site, should dry conditions prevail at the time of development. Mitigation should include wetting of roadways and hydroseeding immediately upon grading to minimize dust and promote vegetative cover. Developers should be required to submit construction schedules designed to minimize the length of time that areas are left open.

Short-term construction impacts resulting from development on the former dump site include the potential removal of significant volumes of buried wastes with the potential for encountering contaminants, primarily metals, in the subsoil during excavations. The location and volume of wastes to be removed cannot be determined until a specific site development plan is proposed and a foundation engineering analyses completed based upon the specific design. However, mitigation of this impact can be achieved by requiring that any site development plan proposed for the former dump site include an environmental contingency plan specific to the development proposed, that focuses on those areas in which excavations will disturb wastes and / or subsoil. The contingency plan should include:

- precise location (New York State Plane Coordinate System) of all areas in which wastes / subsoil will be disturbed;
- purpose of disturbance and method of excavation;
- estimate of the volume of wastes to be disturbed;
- staging plan for excavated wastes;
- waste / subsoil sampling plan designed to determine disposal requirements;
- description of waste transport and disposal methods that must be in accordance with all applicable and appropriate solid and hazardous waste regulations;
- worker health and safety plan compliant with the Occupational Safety and Health Administration (OSHA) requirements under 29CFR 1910.120(e), along with other OSHA requirements applicable to construction activities;
- emergency notification plan listing appropriate TCDOH and NYSDEC contacts.

2.5 Air Resources

Ambient air quality is not routinely monitored by either NYSDEC or TCDOH in the Ithaca Area. The nearest monitoring station is located in Elmira, approximately 30 miles southwest of Ithaca. The Elmira station monitors several air quality parameters including sulfur dioxide, inhalable particulates and ozone. No contravention of State and Federal primary/secondary ambient air quality standards were recorded at the Elmira monitoring station. The air quality in the study area is believed to be consistent with sampling from the Elmira monitoring station.

Air quality information gathered as part of a NYSDOT Design Report/Environmental Assessment for the Route 96 improvement project in the City provides a measure of the current air quality near the study area. The investigations into air quality concluded that there are no known areas of excessive air pollution. The Route 96 project Environmental Assessment report stated that the area is meeting standards with respect to all criteria pollutants (sulfur dioxide, carbon monoxide, ozone, lead, nitrogen dioxide and particulates). Non-stationary sources of air pollution include vehicular emissions, particularly along NY Route 13.

2.5.1 Impacts

Changes in land use would result in additional peak hour trips and increased vehicular traffic along NY Route 13. As identified in Section 2.7, several intersections would operate with a lower LOS under mitigated post development conditions than under projected background conditions. While none of the 27 involved intersections would be reduced to the lowest LOS, Level F, the air emissions from idling vehicles would increase at some locations.

Short term construction impacts include the intermittent periods of increased dust generated by heavy equipment engaged in grading and excavating activities. This activity is temporary in nature.

2.5.2 Mitigation of Impacts

The internal circulation system as shown on the concept plans (Figures 2 through 7) is intended to minimize trip generation and congestion by promoting transit, bicycle, and pedestrian trips. The draft design guidelines also present a series of measures to enhance and promote pedestrian and bicycle travelways by enhancing existing signals, signage and striping systems with the creation of separate pedestrian and bicycle travel lanes on roadways within the future developed portions of the study area. Section 2.7.1 details intersection capacity mitigation and other mitigation measures designed to reduce congestion and resulting vehicle emissions. These traffic mitigations would improve the LOS at several intersections, positively impacting the air quality by reducing congestion and vehicle idling.

Increased traffic volumes may result in increased air emissions, however, it is unlikely that existing air quality thresholds would be breached. Additionally, by encouraging pedestrian, bicycle and transit trips and requiring road network improvements, the resultant air quality impacts are mitigated to the maximum extent feasible.

The generation of airborne construction related dust would be reduced through standard construction practices including application of dust suppressants over the involved area to minimize blowing and circulation of exposed soils/materials. Potential fugitive dust emissions from material storage piles would be controlled through the use of enclosures, seeding, covers or spraying with a dust suppressant as necessary.

2.6 Visual Resources

A Visual Impact Assessment is an evaluation of the visual resources of a particular area. It serves to define the visual environment, evaluates the visual impacts associated with an action and is used to determine what mitigation measures are available to enhance positive visual effects and reduce or eliminate negative visual impacts. A Visual Impact Assessment for the implementation of the Southwest Area Land Use Plan was conducted in the Fall of 1998 and the Spring of 1999. The full report, including a glossary of relevant terms, is included as Appendix E.

To evaluate existing visual resources and assess potential impacts, key viewing points were identified based on a review of topographic maps, aerial photographs, on-site and area-wide inspections. The Key Views represent the receptor locations identified through the GEIS scoping process as the most likely to receive the highest visual impact from potential development. The Key Views are listed in Table 2-1. Figure 22 provides a photographic reference for each of the Key Views.

TABLE 2-1
KEY VIEWS FOR VISUAL IMPACT ANALYSIS

View Number	Location of View	Areas Visible from View
V1	Gorge Trail Buttermilk Falls	Levee parcels F1-F6
V2	Top of Levee	Southwest Park (Parcel A)
V3	Top of Levee	Levee parcels F1-F6
V4	Substitute Parkland	Southwest Park (Parcel A)
V5	Elmira Road	Former Dump Site (Parcel E3)
V6	Spencer Street	Former Dump Site (Parcel E3)
V7	Spencer Street	Former Dump Site (Parcel E3)
V8	Nate's Floral Estates	Former Dump Site (Parcel E1)
V9	West Village Apartments	Southwest Park (Parcel A), Other City Land (Parcel B), Cherry Street (Parcel C) and former dump site (Parcel E)
V10	West Village Apartments	Southwest Park (Parcel A), Other City Land (Parcel B), Cherry Street (Parcel C) and Former Dump Site (Parcel E)

Source: Clark Patterson Associates; McCord Associates (Appendix E).

Viewing distance and potential viewer groups were considered when assessing the visual resources at each of the Key Views. The three distance zones which describe the degree of viewer perception include foreground (0 to ½ mile), midground (1/2 to 2 miles) and background (2 to 4 miles). The level of detail at which features can be perceived diminishes with the distance

from the study area to a point at which areas of color contrast are the only discernable features. The viewer groups include motorists, bicyclists, pedestrians and residents. Each group differs in their length of exposure and sensitivity to the visual environment.

Table 2-2 shows the results of a visual resources evaluation for each of the Key Views. The evaluation was based on Visual Quality, Visual Absorption Capability and Visual Impact Potential.

TABLE 2-2
VISUAL RESOURCES EVALUATION FOR KEY VIEWS

View	Visual Quality	Visual Absorption	Visual Impact Potential
V1	Medium/high increasing to high during spring and fall	Low	High
V2	Medium	Low	High
V3	High	Low	High
V4	Medium	Intermediate	Moderate
V5	Low	Intermediate	Low/moderate
V6	Low	High	Low/moderate
V7	Low	High	Low/moderate
V8	Low	Low	High
V9	Medium/high increasing to high during spring and fall	Low	High
V10	Medium/high increasing to high during spring and fall	Low	Moderate/high

Source: McCord Associates (Appendix E).

In Table 2-10, **Visual Quality** is determined by evaluating vividness, intactness and unity. Vividness is the visual power or memorability of landscape components as they combine in striking visual patterns. Intactness is the integrity of the natural and built landscape. Unity refers to the visual coherence and harmony of composition for the landscape.

In Table 2-10 **Visual Absorption Capability** is listed for each of the Key Views. The visual absorption capability is a measure of the degree to which the visual landscape can be altered before visual impacts are evident. If a view has a high visual absorption capability, significant changes can be made to the landscape before the threshold is exceeded.

Together, the visual quality and its ability to absorb landscape changes form the visual impact potential. A view that has high impact potential is one that exhibits a high visual quality rating and has a corresponding low visual absorption rating.

Key Views V1, V9 and V10 represent elevated views of the study area. At these viewing points, the regional landscape unit offers a common array of visual character features. Key View V1 from the gorge trail within Buttermilk Falls State Park provides a direct view of substitute parkland and undeveloped portions of the study area as well as an existing bulk petroleum storage facility. The valley is framed on all sides by enclosing landform and the consistent flow

of pattern elements of the hillsides mark a high level of visual continuity. It is anticipated that at times, view duration may be long (30+ seconds) while much of the time, hikers will stop only for a brief view.

Key View V9 from West Village Apartments also provides an elevated view of the study area. The apartment buildings appear in the foreground and the study area and surrounding hills are viewed in the background. The earth tones and soft vegetative textures predominate as views are focused on the hillsides and occasional man-made structures including Ithaca College. Key View V10 also from West Village Apartments, presents views of the industrial and commercial development and undeveloped areas in the study area as well as the surrounding hills and Ithaca College at a background distance. The visual quality of V9 and V10 is considered to be medium/high. The overall unity of Key View V10 is slightly lower than that of V9.

Key Views V2, V3 and V4 represent views from within the undeveloped portion of the study area. From these vantage points the diversity of pattern elements such as line, form, color and texture become apparent. From Key View V2 on the levee looking north, the levee itself and the Flood Control Channel become important features. Views from on top of the levee, approximately 10 to 12 feet higher than the surrounding area, offers relatively unobstructed views to the east including the County recycling waste transfer station at a distance. Key View V3 from the levee looking southeast to Elmira Road affords a view of the surrounding hills, open meadow and shopping plaza. Key View V4 from the substitute parkland features positive views of the levee embankment.

Key Views V5 through V7 have a low visual quality rating and an intermediate or high visual absorption capability. View V5 is taken from the parking lot of the Friendly's restaurant across Elmira Road from the study area revealing several existing trees, cars and miscellaneous structures. This view exhibits a low level of unity and intactness when compared with the continuity of view found within the landscape region as a whole. Views V6 and V7 from Spencer Street across Elmira Road into the study area again feature non-unified man-made elements such as commercial buildings, parking lots, power poles and signs that create a visually random pattern character. The views are again considered to exhibit relatively low levels of overall unity and intactness.

Key View V8 from Nate's Floral Estates south into the undeveloped portion of the study area features foreground forms including pavement, light poles, and a residence. The strong horizontal forms of the treeline and hills beyond as well as the meadow further define the view. The earth tone colors of the existing vegetation also dominate. While the visual quality of V8 is low, the impact potential is high due to the potential disturbance of the form and line of the landscape.

2.6.1 Impacts

There are substantial qualitative differences between the potential impacts to visual resources resulting from Alternatives 1 to 5 versus Alternative 6. All views would be adversely impacted by the removal of existing vegetation, addition of visible parking, buildings and traffic. However, Alternative 6 provides a reduced potential for screening and therefore an increased

level of impacts. Table 2-1 provides a summary of the potential impact severity for land use Alternatives 5 and 6 for each Key View.

**TABLE 2-1
SUMMARY OF BASIC PROCEDURE WORKSHEETS DEFINING POTENTIAL IMPACT SEVERITY**

Key View Location	Development Alternative	Landscape Compatibility	Scale Contrast	Spatial Dominance	Total Visual Impact Severity
V1	5	7	9	9	25
	6	7	9	9	25
V2	5	1	1	1	3
	6	3	5	5	15
V3	5	6	7	6	19
	6	6	7	6	19
V4	5	0	0	0	0
	6	3	9	7	25
V5	5	2	5	6	13
	6	2	5	6	13
V6	5	3	3	4	10
	6	3	3	4	10
V7	5	2	3	3	8
	6	2	3	3	8
V8	5	5	8	7	20
	6	5	8	7	20
V9	5	5	7	7	19
	6	5	7	8	20
V10	5	5	7	7	19
	6	5	7	8	20

Source: McCord Associates (Appendix E).

Key:	Severe, 36-27	Moderate, 26-18	Minimal, 17-9	None, 8-0
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In Table 2-11, the Total Visual Impact Severity is listed in the right column. Overall, Alternative 6 poses a greater visual impact severity than Alternative 5. With respect to individual Key

Views, V1 would experience the greatest impact under both Alternative 5 and 6. Key Views V8 and V9 would also experience moderate impacts.

All of the land use alternatives proposed would require the removal of large areas of groundcover within the study area. Vegetative loss would result in the reduction of non-reflective earth tones and fine textures that currently serve to soften views to the built environment. The visual character of all views with the exception of V5, V6 and V7 would be adversely impacted by the loss of mature vegetation.

The introduction of buildings and parking lots within the study area would introduce a dominant form(s) and add visual diversity of color and texture. The smooth and uniform color and texture of a mass building and parking would contrast with the coarse textures of the existing foreground and background landscape. It is expected that these features would detract from the visual importance of the surrounding hillsides.

All Key Views with the exception of V5, V6 and V7 are considered to be highly prone to visual impacts relating to the addition of buildings and parking lots. Building construction is consistent with existing land use as viewed from V5, V6 and V7 and the pattern elements are consistent with the surrounding landscape. For views nearest the undeveloped parcels (V4 and V8), the color, texture and architecture of buildings to be constructed would also have a significant impact on visual resources.

Under Alternatives 1 through 5, Key Views V2, V4 and V8 would be largely screened by the existing vegetation and added landscape screening and buffering efforts called for under the draft design guidelines. The impact of visible buildings and parking are the greatest under Alternative 6 due to the inadequate space available for screening.

The construction of buildings, drainage channels, parking areas and roads imply a scale more comfortable for vehicular use rather than pedestrian level activities. From elevated Key Views V1, V9 and V10, the proposed buildings and parking would increase the perceived scale dominance of areas occupied by commercial, warehouse and industrial developments. The increase in site scale would generally result in equally adverse impacts under the anticipated development density under Alternatives 1, 2 and 5 with more moderate impact under Alternatives 3 and 4. Again, Alternative 6 would allow for only limited screening of built areas and so would result in greater impact to viewers.

2.6.2 Mitigation of Impacts

Where visual resources are adversely impacted, mitigation can be achieved through site design considerations and landscape treatments. Site design sensitivity would be incorporated into any subsequent change in land use through careful consideration of form, line, color and texture.

Form – The form of the proposed parking lots and road alignments should respond to the natural horizontal and vertical curves and buildings should be as low as possible. The rezoning efforts as described in Section 2.2 should consider reductions in maximum building heights to two stories from the currently permitted four stories. The lower

building heights would minimize the disruption of the horizontal character of the study area.

Line – The draft design guidelines call for landscaping throughout parking areas. The landscaped areas would be arranged so it is equally distributed for maximum visual and environmental benefit.

Color – As described in Section 2.2, the draft design guidelines state that primary structural materials for commercial buildings would be limited to masonry, including brick, stone and block. These building materials should be selected so as to encourage harmony with natural tones.

Texture – From a distance, site detail would be perceived as a coarse texture on a relatively smooth landscape. According to the draft design guidelines, visible details such as signage would be considered for scale and placement and light poles shall not exceed 20 feet in height.

The preservation of existing mature trees and vegetation would be encouraged where practicable especially in buffering applications and would be most effective in minimizing potential visual impacts. Where additional landscaping is employed, plantings should be used to break up the scale of potential parking areas and carefully sited trees and shrubs may be used to screen views to parking area from both foreground and background views. The provision of landscaping would also reduce the adverse impacts to visual resources by promoting the perceived continuity of the land uses.

2.7 Transportation

The potential for impacts to the transportation infrastructure within the study area as a result of the adoption of the Southwest Area Land Use Plan have been identified in the project scoping process. This section presents an overview of the existing conditions, the associated impacts and the potential mitigation for the transportation infrastructure as a result of the Plan's adoption. A comprehensive traffic analysis, prepared by SRF & Associates, is presented in Appendix F of this document.

2.7.1 Intersection Capacity Analysis

The street system serving the Southwest portion of the City of Ithaca consists of a network of arterial, collector and local streets. Based on the Final Scoping Document (Appendix A) and consultation with city officials, the study area for the traffic analysis includes 27 key intersections.

Table 2-1 summarizes existing level of service (LOS) and 20-year no action LOS for the P.M. peak hour for the 27 intersections analyzed. The 20-year projections include annual background traffic growth rate of 1.2% and assumes 200,000 square feet of retail/commercial development. This rate of background traffic growth is based on historic traffic volume trends and information on trends in the driver population and vehicles per household. Portions of the levee parcels are

commercially zoned and have direct access to Elmira Road. Consequently, development in this area can reasonably be anticipated with or without adoption of the Southwest Area Land Use Plan. Street and intersection locations are also shown on Figure 23.

TABLE 2-1
SUMMARY OF INTERSECTION LEVEL OF SERVICE (LOS)
SOUTHWEST AREA TRAFFIC AREA INTERSECTIONS, 1998 AND 2018

Intersection Number / Description	1998 Existing Conditions	2018 No Action ⁽¹⁾
1. Route 79 / Floral Ave.	A (4.7)	E (33.4)
2. N. Fulton / W. Buffalo	C (16.4)	E (53.9)
3. N. Meadow / W. Buffalo	C (15.3)	C (17.3)
4. Albany / W. Buffalo	B (10.6)	B (12.6)
5. Cayuga / Buffalo	C (15.9)	B (12.6)
6. Taughannock Blvd. / W. State St.	B (7.8)	B (9.6)
7. N. Fulton / W. State	B (12.2)	C (15.3)
8. N. Meadow / W. State	B (13.4)	C (22.5)
9. N. Meadow / W. Fulton	B (12.5)	*2
10. Albany / W. Clinton	B (7.9)	C (24.3)
11. Turner Pl. / E. Clinton	A (3.6)	F (380.5)
12. N. Meadow / W. Clinton	B (5.7)	*2
13. Albany / S. Titus	B (8.4)	B (8.9)
14. Cayuga / S. Titus	B (6.8)	C (11.3)
15. S. Meadow / Wegmans / South	B (10.5)	C (11.3)
16. S. Meadow / Tops / Wood	B (10.9)	C (17.3)
17. S. Albany / Spencer St.	F (61.0)	*2
18. S. Meadow / Elmira	B (10.3)	B (13.3)
19. Commercial / Elmira	A (2.7)	A (4.2)
20. Spencer / Elmira	A (2.6)	A (4.0)
21. Five Mile / Elmira	B (7.4)	B (11.8)
22. Third / Route 13	B (5.8)	B (8.9)
23. N. Meadow / Cascadilla	A (2.9)	A (3.3)
24. Taughannock / W. Buffalo	B (11.9)	*2
25. Route 13/34 / Dey – Willow	C (17.3)	C (17.9)
26. Route 13/34 / Route 327	A (0.9)	C (11.6)
27. Route 13 Exit Ramp / Lakeshore	D (25.4)	F (335.3)

Source: SRF & Associates, 1999 (Appendix F).

1 Assumes 200,000 square feet of development on the levee parcels

2 Indicates oversaturated conditions

2.7.2 Impacts and Mitigation

Given the functional characteristics of the highway system and the land use alternatives for undeveloped areas in the study area, it was determined that the P.M. (4:30 PM to 5:30 PM) and

Saturday peak hours are the most critical in terms of street volumes and intersection capacities. Review of previous impact reports revealed that traffic flow characteristics during these periods are very similar. Given the greater availability of background data, the P.M. peak was chosen for the detailed impact analysis.

The objective of this GEIS traffic impact analysis is to establish maximum impact thresholds for future development. Preliminary analyses determined that Alternative 6 would require mitigation above and beyond the introduction of a new through route from NY Route 13 to West State Street and improvements at spot locations. Estimates indicate Alternative 6 may require the creation of additional north-south circulation, such as could be provided by widening Meadow Street/Elmira Road, an unfeasible option. Therefore, the most detailed traffic impact analysis focused on quantifying the impacts of Alternative 5 which includes 800,000 square feet of retail development and 200,000 square of office space.

Table 2-1 summarizes projected trip generation from the development anticipated by Alternative 5. The numbers are based on information contained in Trip Generation, 6th Edition, 1997 published by the Institute of Transportation Engineers for driveway volumes generated during the peak hour of adjacent street traffic. Based on the land use mix, size, and anticipated circulation elements associated with future development, trip adjustments were made for pass-by traffic, internal trips, and transit usage as specified in Table 2-1. No adjustment to trip generation was made for pedestrian traffic.

TABLE 2-1
GENERATED TRAFFIC VOLUMES - ALTERNATIVE 5

Description	PM Peak Hour		
	Enter	Exit	Total
Unadjusted Trips – 200,000 sq. ft. Free-Standing Discount Superstore	374	390	764
Reduction of 20% peak hour trips that will be “pass-bys”	-75	-78	-153
Unadjusted Trips – 600,000 sq. ft. Shopping Center	979	1063	2042
Reduction of 20% peak hour trips that will be “pass-bys”	-196	-213	-409
Reduction of 10% peak hour trips that will remain internal	-98	-106	-204
Reduction of 7% peak hour trips for transit usage	-68	-74	-142
Unadjusted Trips – 200,000 sq. ft. General Office Building	53	254	307
Reduction of 0% peak hour trips that will be “pass-bys”	0	0	0
Reduction of 10% peak hour trips that will remain internal	-6	-25	-30
Reduction of 7% peak hour trips for transit usage	-4	-18	-22
Total Adjusted Trips	959	1193	2152

Source: SRF & Associates, 1999 (Appendix F).

Table 2-2 summarizes the land use mix and adjusted trip generation for each of the six alternatives analyzed as part of this GEIS.

TABLE 2-2
LAND USE MIX AND TRIP GENERATION CHARACTERISTICS
ALL FEATURES

Alternative	Residential Units	Office	Light Industrial (1,000 sq. ft.)	Retail	Total Non-Res. Development (1,000 sq. ft.)	Total Adjusted Trips ¹ Vehicles/Hour		
						Enter	Exit	Total
Alt. 1	0	250	200	600	21050	826	1201	2027
Alt. 2	600	100	100	400	600	719	780	1499
Alt. 3	0	0	0	500	13000	666	708	1374
Alt. 4	0	250	0	500	13250	692	936	1628
Alt. 5	0	200	0	800	21000	959	1193	2152
Alt. 6	0	250	0	1000	26250	1259	1547	2806

¹Total Adjusted Trips refers to adjustments made to account for pass-bys, internal trips, and transit usage.
Source: SRF & Associates, 1999 (Appendix F).

The cumulative impact of development generated traffic on the transportation network is dependent on the origins and destinations of such traffic and the location of access drives serving the future development. Table 2-3 summarizes trip distribution patterns. Factors relevant to trip distribution include:

- Population centers in the area;
- Travel time considerations;
- Existing street network configuration;
- Existing traffic conditions and controls;
- Access drive locations.

TABLE 2-3
TRIP DISTRIBUTION PATTERNS

North along NY Routes 13/34	26%
North along NY Route 89	6%
North along NY Route 96	12%
West along NY Route 79	6%
South along NY Routes 13/34	15%
East along Old Elmira Rd/Spencer Rd	15%
East through the City Grid Network	20%

Source: SRF & Associates, 1999

Concept plans for each of the six alternatives are shown in Figures 2 to 7. The concept plans show the access drives necessary to serve developments of varying use mixes and sizes, as well as the proposed overall internal circulation pattern.

Table 2-4 summarizes required circulation elements for each of the hypothetical land use alternatives.

TABLE 2-4
REQUIRED ADDITIONAL CIRCULATION

Alternative	Overall Size (sq.ft.)	Circulation
Alt. 1	1,050,000	<ul style="list-style-type: none"> • Access from W. State St. and Elmira Road/NY Route 13 via the extension of Taughannock Boulevard to the existing Southwest Park access point. • Access from Elmira Road/NY Route 13 via extension of the Wegmans and K-Mart driveways. • Access from Elmira Road/NY Route 13 to the levee parcels • Internal connection from the levee parcels to the Wegmans driveway extension.
Alt. 2	600,000 + 600 units residential	<ul style="list-style-type: none"> • Access from W. State St. and Elmira Road/NY Route 13 via the extension of Taughannock Boulevard to the existing Southwest Park access point. • Access from Elmira Road/NY Route 13 via extension of the K-Mart driveways. • Access from Elmira Road/NY Route 13 to the levee parcels • Internal connection from the levee parcels to the K-Mart driveway extension.
Alt. 3	500,000	<ul style="list-style-type: none"> • Access from Elmira Road/NYS Route 13 at the existing Southwest Park access point. • Access from Elmira Road/NY Route 13 via extension of the K-Mart driveway desirable.
Alt 4	750,000	<ul style="list-style-type: none"> • Access from W. State St. and Elmira Road/NY Route 13 via the extension of Taughannock Boulevard to the existing Southwest Park access point. • Access from Elmira Road/NY Route 13 via extension of the Wegmans and K-Mart driveways. • Access from Elmira Road/NY Route 13 to the levee parcels. • Internal connection from the levee parcels to the Wegmans driveway extension.
Alt. 5	1,000,000	<ul style="list-style-type: none"> • Access from W. State St. and Elmira Road/NY Route 13 via the extension of Taughannock Boulevard to the existing Southwest Park access point. • Access from Elmira Road/NY Route 13 via extension of the Wegmans and K-Mart driveways. • Access from Elmira Road/NY Route 13 to the levee parcels. • Internal connection from the levee parcels to the Wegmans driveway extension.
Alt. 6	1,250,000	Circulation improvement as in Alternative 5 plus additional north-south circulation capacity such as could be provided by additional lanes on Meadow Street.

Source: SRF & Associates 1999

Table 2-5 summarizes intersection level of service (LOS) for existing condition, projected 20-year no action conditions, and before and after mitigation of impacts resulting from both background traffic increases and potential future development as per Alternative 5.

Based on the impact threshold of maintaining level of service at “E” or better, mitigation is required at 10 intersections including the Wegmans access drive. Other existing intersections and new or improved access points are projected to continue to function at an acceptable level of service. The capacity analysis assumes optimization of existing signal phasing as part of the impact mitigation. As summarized in Table 2-5, mitigation also includes addition of through and turning lanes, re-striping of intersections and construction of an additional bridge over the Cayuga Inlet.

An assessment of the impact that construction of bridge connecting Court Street at North Fulton to Taughannock Boulevard (NYS Route 89) as mitigation might have on the residential portions of Court St has been completed. For the following reasons, there will be little, if any, impact on the residential portion of Court St. due to the Southwest Area Plan adoption.

1. Existing PM peak hour turning movement counts indicate that approximately 300 vehicles are crossing the bridge at W. Buffalo Street and turning right to go north on Taughannock Blvd.
2. It is conservatively estimated that half of this traffic (150 vehicles) might use the bridge at Court Street instead of the bridge at W. Buffalo Street.
3. Approximately 80% of the traffic using the new bridge will be oriented to and from either N. Fulton Street or S. Meadow Street.
4. Only 20% of the traffic using the new bridge (or 30 westbound vehicles during the PM peak hour) can be expected to use the residential portion of Court St. to cross the City. 30 vehicles during the peak hour equates to 1 vehicle every 2 minutes.
5. This increase on Court St. equates to approximately 450 vehicles per day.
6. The increase during peak school arrival and departure times is expected to be significantly less and likely imperceptible.

TABLE 2-5
SUMMARY OF INTERSECTION LEVEL OF SERVICE
ALTERNATIVE 5 DEVELOPMENT

Intersection Number / Description	1998 Existing Conditions	With Levee Parcel Development	2018 w/ No Action	2018 w/ Alternative 5		
				LOS w/o Mitigation	LOS with Mitigation	Mitigation
1. Route 79 / Floral Ave.	A(4.7)	A(4.7)	E (33.4)	F (244.2)	E (33.4)	Add an E/B lane to separate left and right turns
2. N. Fulton/ W. Buffalo	C(16.4)	C(15.8)	E(53.9)	* ¹	D(29.8)	Construct new bridge at Court St. to relieve right turn
3. N. Meadow / W. Buffalo	C(15.3)	B(13.0)	C(17.3)	C(20.5)		None
4. Albany / W. Buffalo	B (10.6)	B (10.8)	B(12.6)	B(13.6)	---	None
5. Cayuga / Buffalo	C(15.9)	B(11.2)	B(12.6)	B(13.8)		None
6. Taughannock Blvd. / W. State St.	B(7.8)	B(8.7)	B(9.6)	B(9.5)	---	Construct new approach for Northern Connector
7. N. Fulton / W. State	B (12.2)	B (13.0)	C(15.3)	C(17.2)	---	None
8. N. Meadow / W. State	B(13.4)	B(13.7)	C(22.5)	D(27.2)	---	None
9. N. Meadow / W. Fulton	B(12.5)	B(14.9)	* ¹	* ¹	C/D (22.5/33.7)	Option A: Prohibit E/B thru and left; Option B: add N/B thru lane on bridge
10. Albany / W. Clinton	B (7.9)	B (8.3)	C(24.3)	* ¹	B(13.1)	Add E/B and W/B left turn lanes on W. Clinton
11. Turner Pl. / E. Clinton	A (3.6)	A (3.9)	F(380.5)	* ¹	* ¹	Add a N/B lane to separate left and right turns
12. N. Meadow / W. Clinton	B (5.7)	B (12.0)	* ¹	* ¹	B(7.4)	Prohibit N/B and S/B left turns
13. Albany / S. Titus	B(8.4)	B(8.4)	B(8.9)	B(11.2)	---	None
14. Cayuga / S. Titus	B(6.8)	B(7.6)	C(11.3)	D(21.2)	---	None
15. S. Meadow / Wegmans / South	B (10.5)	B (12.1)	C(19.1)	* ¹	C(17.3)	Add S/B right turn lane; E/B left turn and shared thru/left and exclusive right turns
16. S. Meadow / Tops / Wood	B(10.9)	B(13.2)	C(17.3)	C(17.1)	---	None
17. S. Albany / Spencer St.	F (61.0)	F (159.4)	* ¹	* ¹	D(28.0)	Signalize
18. S. Meadow / Elmira	B (10.3)	C (16.6)	B(13.3)	* ¹	B(12.7)	Add N/B right turn lane; re-stripe W/B for left and shared left/right lanes
19. Commercial / Elmira	A(2.7)	A(2.5)	A(3.9)	A(4.2)	---	None
20. Spencer / Elmira	A(2.6)	A(2.9)	A(4.0)	A(3.8)	---	None
21. Five Mile / Elmira	B(7.4)	B(9.0)	B(11.8)	B(12.8)	---	None
22. Third / Route 13	B(5.8)	B(9.3)	B(8.9)	B(9.2)	---	None
23. N. Meadow / Cascadilla	A(2.9)	B(5.4)	A(3.3)	B(6.5)	---	None
24. Taughannock / W. Buffalo	B(11.9)	B(14.8)	* ¹	* ¹	C(17.7)	Construct new bridge at Court St. between Fulton St. and Taughannock Blvd.

Intersection Number / Description	1998 Existing Conditions	With Levee Parcel Development	2018 w/ No Action	2018 w/ Alternative 5		
				LOS w/o Mitigation	LOS with Mitigation	Mitigation
25. Route 13/34 / Dey-Willow	C(17.3)	C(12.6)	C(17.9)	C(18.5)	---	None
26. Route 13/34 / Route 327	A(0.9)	A(1.0)	C(11.6)	D(21.8)	C(15.0)	Add an E/B land to separate left and right turns
27. Route 13 Exit Ramp / Lakeshore	D(25.4)	E(39.3)	F(335.3)	F(482.4)	C(20.1)	Signalize intersection
28. Route 13/34 / Levee Parcel Drive	---	B(7.8)	B(9.2)	B(7.4)	---	New Traffic Signal
29. Route 13/34 / Site Drive	---	---	---	B(11.3)	---	New Traffic Signal
30. S. Meadow / K-Mart Drive	B(8.6)	B(9.3)	B(10.4)	B(12.6)	---	None

¹ Indicates oversaturated conditions, delay beyond LOS level F
Source: SRF & Associates (Appendix F).

2.7.3 Neighborhood Street Analysis

The neighborhood street impact area is bounded by Court Street to the north, Cayuga Street to the east, NY Route 13 to the west, and Spencer Street to the South. Table 2-1 summarizes functional classification, existing P.M. peak hour traffic volumes, projected 20-year no action P.M. peak hour traffic volumes, and average daily traffic (ADT) volumes for streets analyzed. The 20-year volume projections include annual background traffic growth of 1.2%. This rate of background traffic growth is based on historic traffic volume trends and information on trends in the driver population and vehicles per households.

TABLE 2-1
SUMMARY OF FUNCTIONAL CLASSIFICATION
AND EXISTING AND NO ACTION TRAFFIC VOLUMES
SOUTHWEST AREA NEIGHBORHOOD IMPACT AREA STREET SEGMENTS
1998 AND 2018

Street Segment	Located Between	Functional Classification	Directionality	Existing		Background	
				Peak Hour	ADT	Peak Hour	ADT
* Meadow St.	Wood St. & Elmira Rd.	Principal Arterial	Two-Way	1975	30175	2824	40343
* Meadow St.	W. Buffalo & W. Seneca Sts.	Principal Arterial	One-Way	1259	16800	1598	21324
* Meadow St.	W. State St. & W. Green St.	Principal Arterial	One-Way	1150	13017	1459	16515
Albany St.	W. Buffalo & W. Seneca Sts.	Minor Arterial	Two-Way	516	5160	655	6550
Albany St.	W. Green & W. Clinton St.	Minor Arterial	Two-Way	566	5660	736	7360
Albany St.	Wood St. & Park St.	Minor Arterial	Two-Way	844	8863	1304	13040
Albany St.	Hyers St. & Wood St.	Minor Arterial	Two-Way	788	10055	1065	13312
Cayuga St.	W. Buffalo & W. Seneca Sts.	Minor Arterial	Two-Way	702	7020	891	8910
Cayuga St.	N. Titus & S. Titus Aves.	Minor Arterial	Two-Way	438	4740	460	5111
Elmira Rd.	Park & Plain Sts.	Minor Arterial	Two-Way	1011	11210	1554	17267
W. Buffalo St	N. Meadow St. & Corn St.	Minor Arterial	Two-Way	816	6477	1036	8223
W. Buffalo St	Plain St. & Albany St.	Minor Arterial	Two-Way	607	8328	763	10468
* W. Clinton St	N. Meadow St. & Corn St.	Minor Arterial	Two-Way	805	7114	1373	12482
* W. Clinton St	Fayette St. & Albany St.	Minor Arterial	Two-Way	577	8203	1084	15486
Spencer St.	Park St. & Cayuga St.	Collector	One-Way	428	4279	541	5410
W. State St.	N. Meadow St. & Corn St.	Collector	Two-Way	495	5539	628	7027
South St	S. Meadow St. & Fair St.	Local	Two-Way	355	3051	114	950
Wood St	S. Meadow St. & Fair St.	Local	Two-Way	227	2130	77	700

¹Indicates streets without traffic calming
Source: SRF & Associates, 1999 (Appendix F).

2.7.4 Impacts and Mitigation

It is important to consider volume impacts to adequately address impacts to area residents that are not reflected in operational consideration. Other factors relevant to consideration of the impacts of traffic on residential quality of life include speed, vehicle mix, distribution of traffic over time, dwelling setbacks, and numerous resident demographic characteristics, such as presence of children. Perceived traffic impacts, whether from a motorist or resident perspective, are also related to expectations. Therefore, perceived impacts may be related to a mismatch between resident expectations and the intended purpose and function classification of individual streets. Table 2-1 summarizes volume impacts before and after mitigation on area streets for traffic generated by Alternative 5.

TABLE 2-1
EXISTING, PROJECTED AND MITIGATED TRAFFIC VOLUMES
ALTERNATIVE 5 DEVELOPMENT
SOUTHWEST AREA NEIGHBORHOOD IMPACT AREA STREET SEGMENTS
1998 AND 2018

Street Segment	Located Between	Functional Classification	Directionality	Existing		Background		Site Generated		Future		Future w/Traffic Calming		Annualized Growth Rate
				Peak Hour	ADT	Peak Hour	ADT	Peak Hour	% Change	ADT	% Change	ADT	% Change	
* Meadow St.	Wood St. & Elmira Rd.	Principal Arterial	Two-Way	1975	30175	2824	40343	279	10%	43329	7%	43329	7%	1.8%
* Meadow St.	W. Buffalo & W. Seneca Sts.	Principal Arterial	One-Way	1259	16800	1598	21324	356	22%	26074	22%	26074	22%	2.2%
* Meadow St.	W. State St. & W. Green St.	Principal Arterial	One-Way	1150	13017	1459	16515	370	25%	20703	25%	20703	25%	2.3%
Albany St.	W. Buffalo & W. Seneca Sts.	Minor Arterial	Two-Way	516	5160	655	6550	26	4%	6810	4%	6090	-7%	0.8%
Albany St.	W. Green & W. Clinton St.	Minor Arterial	Two-Way	566	5660	736	7360	135	18%	8710	18%	7900	7%	1.7%
Albany St.	Wood St. & Park St.	Minor Arterial	Two-Way	844	8863	1304	13040	165	13%	14690	13%	13256	1.7%	2.0%
Albany St.	Hyers St. & Wood St.	Minor Arterial	Two-Way	788	10055	1065	13312	174	16%	15488	16%	14024	5.3%	1.7%
Cayuga St.	W. Buffalo & W. Seneca Sts.	Minor Arterial	Two-Way	702	7020	891	8910	20	2%	9110	2%	8130	-8.7%	0.7%
Cayuga St.	N. Titus & S. Titus Aves.	Minor Arterial	Two-Way	438	4740	460	5111	0	0%	5111	0%	4549	-11%	-0.2%
Elmira Rd.	Park & Plain Sts.	Minor Arterial	Two-Way	1011	11210	1554	17267	231	15%	19833	15%	17934	3.9%	2.4%
W. Buffalo St	N. Meadow St. & Corn St.	Minor Arterial	Two-Way	816	6477	1036	8223	43	4%	8565	4%	7660	-7%	0.8%
W. Buffalo St	Plain St. & Albany St.	Minor Arterial	Two-Way	607	8328	763	10468	43	6%	11058	6%	9907	-5%	0.9%
* W. Clinton St	N. Meadow St. & Corn St.	Minor Arterial	Two-Way	805	7114	1373	12482	150	11%	13845	11%	13845	11%	3.4%
* W. Clinton St	Fayette St. & Albany St.	Minor Arterial	Two-Way	577	8203	1084	15486	150	14%	17614	14%	17614	14%	3.9%
Spencer St.	Park St. & Cayuga St.	Collector	One-Way	428	4279	541	5410	66	12%	6070	12%	5475	1.2%	1.2%
W. State St.	N. Meadow St. & Corn St.	Collector	Two-Way	495	5539	628	7027	15	2%	7195	2%	6422	-8.6%	0.7%
South St	S. Meadow St. & Fair St.	Local	Two-Way	355	3051	114	950	0	0%	950	0%	950	0%	-5.7%
Wood St	S. Meadow St. & Fair St.	Local	Two-Way	227	2130	77	700	0	0%	700	0%	700	0%	-5.4%

Source: SRF & Associates, 1999 (Appendix F).

¹Indicates streets without traffic calming

The primary method recommended to mitigate traffic impacts within these neighborhoods is to implement a comprehensive traffic calming program.

The overall goals and objectives of traffic calming mitigation are to:

1. Encourage greater use of multi-modal transportation (i.e. transit, bicycling, walking);
2. Maintain livability of neighborhoods and reduce attractiveness of cut through routes;
3. Direct volume to appropriate routes where congestion is minimized.

To achieve these goals traffic calming projects look at three kinds of possible solutions: education, enforcement, and engineering.

- **Education** alerts people to ways they can help ease traffic problems-for example, by reducing their speed or travelling by bus or bicycle instead of automobile.
- **Enforcement** enlists the help of the Police Bureau's Traffic Division to focus enforcement efforts on impacted streets and increase community awareness of speeding problems.
- **Engineering** tools include a variety of traffic calming devices that can reduce speed, decrease volumes, and/or improve safety. For example, speed bumps and traffic circles can be used to slow traffic, and curb extensions can improve pedestrian safety.

While education and enforcement are important to attaining overall traffic calming goals, the focus of recommended mitigation is directed toward engineering measures that when properly designed, more consistently ensure reduced speeds and cut-through traffic volumes.

The existing road network configuration has concentrated traffic volumes on particular streets creating disparate impacts. Recommended traffic mitigation:

- addresses existing areas of congestion which discourage traffic from using principal arterial routes;
- disperses traffic more uniformly over minor arterials; and
- proposes restricting through traffic on local streets if there is consensus on the neighborhood level to accept the resulting inconveniences.

As shown in Table 2-1, without traffic calming mitigation measures the principal and minor arterials would service approximately 89 percent of the traffic increases generated by the future Southwest Area development as projected in Alternative 5. Upon implementation of traffic calming plans, an even greater percentage of traffic would be diverted from residential areas. The extent of such diversion depends on the extent of the traffic calming measures implemented. The

traffic calming devices recommended are considered more effective in reducing vehicular volumes in comparison to other traffic calming measures.

Diverting traffic to arterial roadways is consistent with the underlying functional purpose of these roadways. Given the presence of residential land uses abutting many of the minor arterials, however, some level of mitigation is also necessary to help maintain the quality of life for residents of such streets. Traffic calming must take into consideration the intended purpose of various streets, otherwise efforts to reduce impacts on streets designed to carry through traffic (minor arterials) can result in adverse impacts to local streets.

National experience suggests that traffic calming should be planned on an area-wide basis versus a spot or link basis, but not over such a wide area that it becomes difficult to achieve consensus on a plan. Spot or link measures tend to only divert traffic from one residential street to another adjacent street. More successful results are attained with sub-area traffic calming plans. The optimal scale for planning purposes is the individual neighborhood, thus neighborhood traffic calming plans are recommended to address the traffic volume increases exhibited in Table 2-1.

Based upon the projected traffic increases and potential impacts on livability resulting from the development of the Southwest Area, the following three areas are ranked in order of priority for developing and implementing neighborhood traffic calming plans:

- Elmira Road/Spencer Street/S. Plain Street/S. Albany Street/Cayuga Street Area;
- Wood & South Streets;
- West Buffalo Street & West Clinton Street.

Ithaca's Traffic Calming Program, currently in its initial stages, is one part of the City's commitment to the safety and livability of residential neighborhoods. Under the program, City staff would work with residents to identify traffic problems in their neighborhoods and find solutions that are acceptable and appropriate. This section documents mitigation impacts following implementation of selected traffic calming measures. Actual results may vary based upon the type and extent of measures chosen in consultation with neighborhood residents.

Citizen involvement is an essential part of all traffic calming projects. The people who live and work in the project area must have the opportunity to become actively involved in the planning and decision-making process. Residents help identify specific neighborhood characteristics that should be taken into account when deciding what to do. Thus, the specific neighborhood traffic calming plan for each of the three recognized neighborhood areas should be developed by consensus of the affected residents, rather than prescribed in this report at this time.

The development of each specific neighborhood traffic calming plan should involve identifying education, enforcement, and engineering solutions that achieve the neighborhood goals and objectives and the necessary mitigation for the neighborhood as a whole. Formulation of the targeted mitigation should consist of the following steps:

- Identify neighborhood goals and objectives;
- Identify mitigation criteria;
- Develop alternative plans/solutions ;
- Identify recommended education and enforcement activities;
- Identify recommended engineering solutions;
- Implement recommended solutions with neighborhood endorsement.

In addition to traffic volume, the ranking of needs and extent of the traffic calming plans should also be based upon other criteria including prevailing speeds, residential density along road segments, zoning, sidewalk conditions, elementary school crossings, presence of pedestrian generators within 1,000 feet of the street, and street width.

Collaborative efforts among all stakeholders and all interested citizens are needed to find solutions that best serve the many uses of the neighborhood and the street system. To aid in furthering this goal, traffic calming measures that are potentially suitable for use in reducing volume foremost, and speed, are identified and categorized by roadway function, as shown in Table 2-2.

TABLE 2-2
POTENTIAL RESIDENTIAL TRAFFIC CALMING MEASURES

Potential Traffic Calming Measure	Minor Arterials	Collectors	Local
	Albany / S. Plain / S. Cayuga Streets Area & W. Buffalo & W. Clinton Streets	W. State Street	Wood, South Streets
Mid-Block Slow Points		✓	✓
Chicanes			✓
Pavement Narrowing			✓
One-way Entry/Exit Chokers			✓
One-way Streets	✓		✓
Parking Variants	✓	✓	✓
Raised Crosswalks		✓	✓
Speed Humps			✓
Speed Tables	✓	✓	✓
Modified Intersection Channelization	✓	✓	✓
Traffic Circles			✓
Related Streetscaping	✓	✓	✓
Entry Treatment	✓	✓	✓
Textured Pavement	✓	✓	✓
Mid-Block Bump-outs	✓	✓	✓
Curb Extensions at Intersections	✓	✓	✓

Source: SRF & Associates

At a minimum, potential new devices should meet the following criteria:

- Devices must minimize conflicts between motor vehicles, bicycles, and pedestrian.
- Devices must be well illuminated and visible.
- Appropriate markings and signs shall be used where applicable
- Devices must allow the traffic stream to maintain an acceptably consistent speed on minor arterial streets
- Pavement treatments must not pose a hazard to bicycles or pedestrians, or impede people with disabilities.
- Devices must ensure safety and visibility to pedestrians and other non-vehicular traffic.

- Devices cannot inappropriately restrict buses, emergency vehicles, and trucks from providing normal and necessary services to the neighborhoods.

Elmira Road/S.Plain Street/S.Albany Street/Cayuga Street Area

This system of neighborhood streets is very different from local service streets in that they are part of the City's arterial street system. They are intended to serve as distributors of traffic between neighborhoods. In other words, they are the streets that are commonly called "through" streets. They serve as fire response routes, transit routes, and designated bike routes. On the other hand, like local service streets, they are also residential in nature. As residential streets, it is important that livability is maintained and enhanced to ensure the long-term viability of neighborhoods. The inherent conflict between the need to move traffic efficiently and the need to keep the neighborhood livable presents a unique challenge for the citizens and staff, that must balance the many different needs, interests, and uses of collector and minor arterial streets such as these.

Table 2-1 indicates that segments of Albany Street currently experience average daily volumes ranging between 5,000-10,000 vehicles per day. Under the existing traffic circulation and control plan, normal traffic growth and potential full build-out design year traffic volumes are projected to approach 17,000 vehicles per day on the highest trafficked segment. Adjacent parallel roads, including S. Cayuga Street, Spencer Street, and S. Plain Street currently carry, and are expected to continue to carry daily volumes at less than half the volume on Albany Street.

Plans to reduce the traffic on Albany Street have been undertaken by the City. The intent is to distribute existing and future volumes to South Meadow and West Clinton Streets. The following measures are currently planned

Reconfiguration of Spencer/Elmira/S. Albany /Park Street Intersection:¹ Under this plan, Park Street is being converted to one-way westbound. A timber and stone median treatment will be constructed on Spencer Street to better define the flow of traffic. And a gateway treatment will be constructed along Albany Street extending from the 600 block south along Elmira Road approximately halfway to its intersection with Plain Street.

Development Of A Comprehensive Neighborhood Arterial Traffic Calming Plan – It is recommended that the highest priority be given to establishing a comprehensive neighborhood minor arterial traffic calming plan for this neighborhood sub-area. The purpose of the plan is to enhance livability for residents along the minor arterials by confronting traffic problems through the use of education, enforcement, and engineering tools. Traffic calming devices including, but not limited to those identified in Table 2-19 should be further evaluated, and constructed where

¹ Since the completion of the Traffic Study (Appendix F), the City of Ithaca Board of Public Works has amended the resolution recommending the one-way conversion of Park Street. The new recommendation for Park Street is as follows: retain two-way circulation on the street and install a diverter on only the eastbound lane to prevent exiting movement from Park Street onto Albany or Old Elmira Road. The 1998 existing traffic volume count for the turning movement eastbound out onto Albany or Old Elmira Road is zero (0). Therefore, it has been concluded that the effect of the change on this analysis will be insignificant. See Figure T-5, Intersection 17 in the Traffic Study (Appendix F).

applicable. Devices applicable to this area include: one-way streets, parking variants, speed tables, modified intersection channelization, related streetscaping, entry treatment, 22' speed humps, textured pavement, mid-block bump-outs, and curb extensions at intersections.

Potential S. Plain Street Bridge – As a long-term measure, the potential construction of a new S. Plain Street bridge for motorist travel would allow north/south traffic to be more equitably distributed among the minor arterial streets.

Wood & South Streets

Wood and South Streets are considered local service streets that serve local circulation needs—auto, bicycle, and pedestrian—and provide access to local residences and businesses. Local service streets make up a large part of the City's street system, and should not carry significant volumes of through-traffic.

Inspection of existing average daily volumes on these two streets indicates that South Street carries approximately 3,050 vehicles per day (vpd) versus 2,130 vpd on Wood Street. The higher traffic volumes on South Street reflect a larger non-local traffic component, whereas the lower Wood Street volumes are more representative of local traffic only. Speed humps situated on both Wood and South Streets have already been installed to help reduce the undesirable cut-thru volumes currently using the local streets.

The City has recently approved the following measures for immediate implementation: a diverter will be installed across the intersection of Wood Street and Fair Street from northwest to southeast permitting travel between South Meadow Street and Titus Towers only (i.e. all through traffic will be prohibited) and; a second diverter will be installed at the intersection of South Street from northeast to southwest permitting travel between South Meadow Street and the westernmost block of South Titus Ave. Again, all through traffic will be prohibited. These conditions have been considered part of the background and future conditions for analysis purposes in this report.

West Buffalo Street Area

The West Buffalo Street area, between S. Meadow Street and Albany Street, is another minor arterial city street targeted for higher priority traffic calming measures. While the projected traffic increase (4-6 percent) on West Buffalo Street from the future development of the Southwest Area is less than on other minor arterials roadways such as W. Clinton Street, other traffic calming mitigation criteria including the presence of elementary school crossings, multiple pedestrian generators, and the existing street width, all of which combine to further warrant a greater need for neighborhood traffic calming actions.

Traffic calming devices more applicable for achieving pedestrian safety in this area and for calming future traffic volumes include intersection curb extensions, curb radius modifications, enhanced crosswalk delineation, related streetscaping, and mid-block bulb-outs.

Before and after studies of residential areas with traffic calming programs in place indicate that a volume reduction of approximately 11 percent is typical when traffic calming measures similar to those described above are employed². A study in the Town of Penfield³ (a suburb of Rochester, NY), yielded a 12 percent decrease in volumes through a residential neighborhood via traffic calming measures similar to those recommended in this report.

Assuming that the traffic calming measures recommended yield an 11% decrease in volumes as expected, Table 2-1 shows net increase in volumes due to the future development. It can be expected that enforcement of implemented traffic calming measures by the City will yield an even greater decrease in volumes through the residential neighborhoods.

Table 2-1 also shows the annualized growth rate over 20 years. All streets listed in the table exhibit typical growth rates.

2.7.5 Transit, Bicycle, and Pedestrian Analysis

Tompkins Consolidated Area Transit (TCAT) routes #4 and #55 currently serve the Southwest Area Land Use Study area. Route #4, operates hourly between 6:25 A.M. and 7:25 p.m. Monday through Sunday and provides service between Seneca Street and Tioga Street and Buttermilk Falls State Park with 12 stops including K-Mart and Tops Market. Route #55, operates 5:30 A.M. and 6:30 P.M. Monday through Friday and provides services between Lincoln Street and Dey Street, the Vet College and Newfield Depot Road including stops at Tops Market and along NY Route 13. In August 1999 TCAT will introduce a new route structure which is planned to include a route serving the NY Route 13 commercial corridor seven days per week including evening hours Monday through Saturday.

Bicycle and pedestrian facilities in the study area are more limited. As reported in the 1997 Ithaca Bike Plan, there are no particular bicycle provisions on the five lane 62-foot Meadow Street/Elmira Road right-of-way south of Clinton Street. Meadow and Fulton Streets between Cascadilla and Clinton Streets have 14-foot outside travel lanes to accommodate bicyclists. All three street segments as well as Spencer Street, West Green Street and West Seneca Street are proposed to be re-stripped to provide a four or five foot bikelane or a 14-foot hybrid travel lane with stencils to alert motorists to bicycle use. While installation of sidewalks has been required in conjunction with more recent development/redevelopment projects, sidewalks are intermittent in the NY Route 13 corridor.

2.7.6 Impacts and Mitigation

Traffic impacts on bicycle and pedestrian street users are related both to operational and livability impact measures. Bicyclists and pedestrians may be reluctant to use streets with substantial vehicle congestion or high volumes particularly if no provisions have been made to accommodate them. The proposed roadway configuration includes curbs and catch basins within a 68-foot right-of-way to provide two 11-foot travel lanes, two 5-foot bike lanes, two 8-foot sidewalks, and 10-foot planting strips between each travel lane and curb. This road configuration

² County Surveyors Society, *Traffic Calming in Practice*, London, 1994

³ Benway, Geoffrey A., *Huntington Meadows Speed Humps, Technical Memorandum*, Town of Penfeld, June, 1998

is intended to encourage bicycle and pedestrian circulation. The looped street network also facilitates service by public transit. These features as well as the anticipated mixed land uses serve to minimize traffic impacts by encouraging internal trips, transit use, and off-peak travel. They also provide opportunities to improve transit bicycle and pedestrian access in the Southwest Area compared to existing conditions.

2.8 Daily Life

The sensory qualities of the surrounding environment affect the daily life of residents and visitors to the area and influence how they perceive their community. Study area visual resources are described in Section 2.6 and air quality issues are discussed in Section 2.5. Short term and long term study area noise levels are discussed below.

The study area currently contains parcels of undeveloped land as well as residential, commercial and industrial uses. The Environmental Impact Statement, prepared in 1994 for a proposed discount store to be located within levee parcels F1, F2 and F3, indicated that the primary generator of noise in the area is vehicular traffic on Elmira Road and access points to existing commercial uses. There were no prominent stationary noise generators in the immediate vicinity (EIS, 1994).

As part of the 1994 study, noise measurements were taken on the levee and adjacent to Elmira Road at the levee area. The ambient sound level measured from a location within the right-of-way of Elmira Road was recorded to be 55 decibels (dBA). Intermittent sound levels of 68 to 76 dBA were also recorded at this location. A second reading of 54 to 58 dBA was taken at a location on top of the levee (EIS, 1994).

2.8.1 Impacts

Changes in noise levels due to potential development within the study area are both construction related and long term. Construction related noise would include short term intermittent noise that is generated by the heavy equipment for site work and building construction. Table 2-1 lists the sound levels of various types of heavy equipment at a distance of 50 feet. Based on Table 2-1, the maximum sound level of construction equipment is estimated at 95 dBA. More typical noise levels for heavy equipment at a distance of 50 feet is 80 dBA.

The recommended Federal Highway Administration (FHWA) hourly sound level for a school or residential area is 67 dBA for periodic noise generators. Such sound levels would occur further than 1,250 feet from a source generating a sound level of 95 dBA at 50 feet or 225 feet from a source generating a sound level of 80 dBA at 50 feet. It is anticipated that construction activities nearest Nate's Floral Estates are likely to include some periodic noise generation in excess of 67 dBA. In addition, it is expected that construction of turning lanes, bridges and traffic calming devices would most likely produce periodic noise levels of about 67 dBA at some residences and businesses.

TABLE 2-1
NOISE LEVELS FOR VARIOUS CONSTRUCTION EQUIPMENT

Equipment Type	Sound Levels in dBA Measured at 50 feet
Autograder	81
Backhoe very large	91
Compressors	71-87
Concrete plant	93
Concrete pumps	76
Concrete saw	87
Concrete saws, chain	88-93
Crane	81-96
Dozers with squeaky tracks	90-93
Dozers, Sheepsfoot	82-88
Generators	69-75
Gradall	87-99
Graders	77-87
Loaders, bucket	80-81
Loaders, terex	96
Pavers	82-92
Pile Driver	90
Rock Drills (handheld, pneumatic)(track mounted)	91
Rollers	72-80
Rollers, Vibrating	80-85
Scrapers	89-95
Scrapers, Elevating	88
Tractors with water pump	73-80
Trucks, 14 wheel	88
Trucks, asphalt	71-82
Trucks, cement	91
Trucks, off highway	69-82
Water pumps	79

Source: Clark Patterson Associates

Potential long-term impacts to noise levels in the study area include noise from heating, ventilation and air conditioning (HVAC) equipment, increased vehicular traffic, and maintenance activities. A typical HVAC unit with a 35,000 cubic feet per minute capacity would generate sound levels of approximately 51 dBA at a distance of 50 feet, a level which is within the FHWA recommended hourly sound level for residential areas. Additionally, as described in Section 2.2, the design guidelines are expected to address buffering to further minimize potential adverse noise impacts from such activities on existing and future residential and recreational uses.

Based on the six alternatives examined, future land use may generate an additional 1,400 to 2,800 peak hour trips. Based on Alternative 5, the percent change in mitigated traffic volumes may range from 2 to 25 percent. Since noise is not cumulative, such volume increases are not expected to result in a significant increase in background traffic noise levels previously reported

to be 55 dBA at Elmira Road. Relevant state and federal agency guidelines define a substantial increase for daily noise levels as an increase of 5 or more dBA.

The future land uses would also result in additional heavy truck traffic from delivery vehicles, transport trailers and maintenance activities. For example, a heavy truck with three or more axles would generate a noise level of 74 dBA at 100 feet assuming a speed of 50 km/hr. (30 mph) This same truck at a distance of 225 feet would generate a sound level of 67 dBA. Maintenance activities, including lawn mowing, snow plowing and trash removal, generate periodic intermittent noise. Estimated noise levels at 100 feet for a lawn mower is 70 dBA, 83 dBA for a heavy snow plow and 82 dBA for a dump truck. Estimated noise levels from these periodic sources at distances of 600 feet do not exceed the acceptable noise threshold of 67 dBA.

Changes in light levels as parking areas and buildings are lit for security and safety purposes. Previously unlit areas will be lit up as development occurs. It should be noted that development can occur on several parcels without the Plan's adoption.

2.8.2 Mitigation of Impacts

Mitigation of construction related noise would be managed through proper maintenance of heavy equipment and adherence to a work schedule as defined by the City. No significant impacts to long term noise generated as a result of HVAC equipment, increased traffic and maintenance activities is projected. While the long term noise impacts do not require further mitigation, the design guidelines to be adopted along with the rezoning action provide for landscaping buffers that allow for additional screening and noise reduction.

To mitigate light impacts lighting levels should be in accordance with the guidelines set forth in the National Association of Illumination Engineers guidelines. Specifically, sharp cut-off fixtures and downlighting is recommended. Lighting plans, included in specific site plan review submittals, will be reviewed to minimize impacts of off-site light spillage. Vegetative buffering will also minimize light impacts.

2.9 Utilities

The capacity and condition of the study area's existing water supply system and sewer service system were examined in a report on study area utilities. The report also discusses the ability of existing utility systems to support the demands of potential future development. The following is a summary of the utilities report, the full report can be found in Appendix G.

2.9.1 Water Service

The City of Ithaca currently owns, operates, and maintains a public water system that serves areas adjacent to the study area. Water transmission/ distribution lines exist within road rights-of-way of Elmira Road, South Meadow Street, West Clinton Street, and Cherry Street. The portion of the City's system providing service to the area is shown in Figure 24.

Water supplied to the study area from the treatment plant is by gravity through a network of 6-inch, 8-inch, and 12-inch main. A potential of 3.0 million gallons of storage is available in this

area from the 1.5 million gallons in the plant's clear well and another 1.5 million gallons in the City's Elm Street storage tank. The overflow of the Elm Street tank is at an elevation of 595 feet above sea level which accounts for static water pressures in the study area in excess of 80 pounds per square inch (psi) in most cases.

With this quantity of storage at this elevation, the duration that the required fire flows can be sustained is more than adequate for compliance with most fire protection standards. Associated fire flow information developed from recent hydrant flow tests conducted throughout the study area by the City indicates available fire flows range from 750 gallons per minute (gpm) to 3,123 gpm. Results of the fire flow tests can be found in Appendix G.

The source of water supply to this area for both domestic use and fire protection is the City's water treatment plant. The plant, which has a treatment capacity of 7.0 million gallons per day (MGD), is limited in its production by its ability to draw water from Six Mile Creek. That current capacity is 5.0 MGD. The City is presently in negotiations with others about the consolidation of local water treatment facilities that should increase available supply to the City and the study area.

2.9.2 Impacts

To assess the impact that a particular scale of development would have on the City's water infrastructure, it is necessary to project the consumption of such development based on established criteria. A summary of the domestic water usage anticipated for each hypothetical development alternative is presented in Table 2-1.

TABLE 2-1
ESTIMATED DOMESTIC WATER USAGE

ALT. NO.	Square Feet/Use	Estimated Unit Flow Rate	Average Daily Flow	Peak Hourly Flow Rate
1	600,000 SF-Retail	0.06 gpd/SF	36,000 gals./day	200 gpm
	250,000 SF-Office	0.08 gpd/SF	20,000 gals./day	133 gpm
	200,000 SF-Light Industrial	N/A	44,000 gals./day	122 gpm
TOTAL FLOW ALTERNATIVE 1			100,000 gals./day	455 gpm
2	400,000 SF-Retail	0.06 gpd/SF	24,000 gals./day	133 gpm
	100,000 SF-Office	0.08 gpd/SF	8,000 gals./day	53 gpm
	100,000 SF-Light Industrial	N/A	22,000 gals./day	61 gpm
	600 Residential Units	400 gal./unit/day	240,000 gals./day	667 gpm
TOTAL FLOW ALTERNATIVE 2			294,000 gals./day	914 gpm
3	500,000 SF-Retail	0.06 gpd/SF	30,000 gals./day	166 gpm
TOTAL FLOW ALTERNATIVE 3			30,000 gals./day	166 gpm
4	500,000 SF-Retail	0.06 gpd/SF	30,000 gals./day	166 gpm
	250,000 SF-Office	0.08 gpd/SF	20,000 gals./day	133 gpm
TOTAL FLOW ALTERNATIVE 4			50,000 gals./day	299 gpm
5	800,000 SF-Retail	0.06 gpd/SF	48,000 gals./day	266 gpm
	200,000 SF/Office	0.08 gpd/SF	16,000 gals./day	107 gpm
TOTAL FLOW ALTERNATIVE 5			64,000 gals./day	373 gpm
6	1,000,000 SF-Retail	0.06 gpd/SF	60,000 gals./day	333 gpm
	250,000 SF-Office	0.08 gpd/SF	20,000 gals./day	133 gpm
TOTAL FLOW ALTERNATIVE 6			80,000 gals./day	466 gpm

Source: Clark Patterson Associates

Estimates of daily usage range from 30,000 gallons per day (GPD) for Alternate 3, which is all retail to approximately 300,000 GPD for Alternate 2, which includes 600 residential units. With the current finished flow of the City's water treatment at 3.5 MGD compared to a capacity of 5.0 MGD, for all development alternatives, the City's existing water supply system (source, storage, and distribution) has adequate capacity to meet projected domestic water supply needs.

The second significant factor in determining development impact is the fire flow required to comply with Insurance Services Office (ISO) requirements as also required by the NYSDOH. Required fire flows for the hypothetical development alternatives would vary based on the nature and the density of the development. For example, "Needed Fire Flow" as referred to by ISO for wood frame two family residential units spaced 100 feet apart would be 500 gpm for two-hour duration. In contrast, "Needed Fire Flow" for a large-scale retail use (worst case) could require that a 9,200 GPM flow be maintained for a three-hour period. This would amount to a volume of 1.656 million gallons being withdrawn from the City's 3.0 million gallons of storage available, thus, significantly limiting the system's ability to support other simultaneous fire suppression activities. Furthermore, the City's existing piping network can not support a 9,200 gpm flow rate. Only five hydrants were able to flow over 7,000 gpm while maintaining minimum (20 psi) system pressure.

Other adverse impacts may occur on the existing system as a result of any expansion of the water distribution system. These impacts may include: increased frequency of momentary pressure reduction due to high demands; temporary degradation of water quality as flow in mains may be reversed; increased operation and maintenance costs due to higher treatment plant production

rates; loss of capacity for expansion elsewhere in the system; short-term, temporary construction impacts; and increased potential for main breaks/leaks due to higher velocities in mains contributing to excess water hammer.

2.9.3 Mitigation of Impacts

Proposed mitigation measures are presented in Table 2-1. As previously described, for all development alternatives, the City’s existing water supply system (source, storage, and distribution) has adequate capacity to meet projected domestic water supply needs. However, to supply adequate fire flow combined with domestic flow it would be necessary to interconnect piping in the existing system through the development area. The configuration of a proposed water distribution system to service the hypothetical development alternatives within the study area is as shown in Figure 25. It provides a more direct route of piping, through larger diameter main, to the City’s 1.5 million gallon Elm Street tank and therefore provides adequate fire flow protection.

TABLE 2-1
SOUTHWEST AREA UTILITIES IMPACT MITIGATION

Potential Impact	Mitigation
1. Extreme (>9,000 gpm) fire flows required for typical large retail outlet.	Require building sprinkler system and private fire pumps.
2. Water system pressure fluctuations and initial water quality degradation.	Loop distribution system; monitor system construction and direct line flushing.
3. Increases costs (water and sewer) due to higher flow rates.	Assess user fees; price commodity on unit basis; reevaluate rates.
5. Environmental impacts of construction activities.	Specify and detail mitigation methods in all installation contracts and provide qualified inspection during construction.
6. Loss of capacity for expansion elsewhere.	Develop capital improvement plans and supportive utility rate structures.

2.9.4 Sewer Service

The City also owns, operates, and maintains a sanitary sewer collection system. The system, portions of which are estimated to be 100 years old, is troubled by infiltration and inflow, grease, and age related problems as reported by the City’s Public Works Department. Peak flow pumping capacity deficiencies within their sewage collection system are likely exacerbated by system infiltration and inflow problems. A schematic representation of the City’s existing wastewater collection and pumping system is shown in Figure 24.

All wastewater from the existing area as well as the study area is conveyed to the City’s wastewater treatment plant. The plant is currently rated for a 10 MGD and is expanding to a treatment capacity of 13 MGD. The facility currently treats up to 9.2 MGD with average daily flows of approximately 7.5 MGD.

2.9.5 Impacts

The nature of the sanitary waste generated by the various alternative uses (retail, office, residential) is typically domestic. The proposed light industrial uses may generate flows that would be higher in strength than domestic waste and potentially can contain some constituents of concern to the City's waste disposal system. Pretreatment by the industry of any such waste in accordance with the City's wastewater pretreatment program should adequately mitigate any concern. A tabulation of Estimated Wastewater Flow Rates for the six land use alternatives is presented in Table 2-1. Although peak flows may vary based on the type of contributing use, sewer flow is usually in the range of 80 percent of the building's domestic water consumption.

TABLE 2-1
ESTIMATED WASTEWATER FLOW RATES

ALT. NO.	Square Feet/Use	Estimated Unit Flow Rate	Average Daily Flow	Peak Hourly Flow Rate
1	600,000 SF-Retail	0.048 gpd/SF	28,800 gals./day	80 gpm
	250,000 SF-Office	0.064 gpd/SF	16,000 gals./day	45 gpm
	200,000 SF-Light Industrial		36,903 gals./day	102 gpm
TOTAL FLOW ALTERNATIVE 1			81,703 gals./day	227 gpm
2	400,000 SF-Retail	0.048 gpd/SF	19,200 gals./day	53 gpm
	100,000 SF-Office	0.064 gpd/SF	6,400 gals./day	18 gpm
	100,000 SF-Light Industrial		18,417 gals./day	51 gpm
	600 Residential Units	320 gal./unit/day	192,000 gals./day	533 gpm
TOTAL FLOW ALTERNATIVE 2			236,017 gals./day	655 gpm
3	500,000 SF-Retail	0.048 gpd/SF	24,000 gals./day	66 gpm
TOTAL FLOW ALTERNATIVE 3			24,000 gals./day	66 gpm
4	500,000 SF-Retail	0.048 gpd/SF	24,000 gals./day	66 gpm
	250,000 SF-Office	0.064 gpd/SF	16,000 gals./day	45 gpm
TOTAL FLOW ALTERNATIVE 4			40,000 gals./day	111 gpm
5	800,000 SF-Retail	0.048 gpd/SF	38,400 gals./day	107 gpm
	200,000 SF/Office	0.064 gpd/SF	12,800 gals./day	35 gpm
TOTAL FLOW ALTERNATIVE 5			51,200 gals./day	142 gpm
6	1,000,000 SF-Retail	0.048 gpd/SF	48,000 gals./day	133 gpm
	250,000 SF-Office	0.064 gpd/SF	16,000 gals./day	44 gpm
TOTAL FLOW ALTERNATIVE 6			64,000 gals./day	177 gpm

Source: Clark Patterson Associates

The City's wastewater treatment facility has more than sufficient capacity for many of the hypothetical land use alternatives listed. With a maximum average daily flow of 0.236 MGD for Alternative 2 and application of a "peaking" factor of 4, the additional flow of just under 1 MGD can be treated at the City's facility which currently processes, on average, 7.5 MGD and is rated for 10 MGD. With the exception of light industrial development, all other alternatives are assumed to produce waste of a "domestic" organic nature that should pose no burden to the City's treatment works. The light industrial or any similar "process" flow would have to be evaluated on a case by case basis.

The existing network of 8-inch and larger diameter mains and the two wastewater lift stations that service the area (Elmira Road and Wood Street) also have ample capacity to handle wastewater flow from the hypothetical land use alternatives. Other impacts of concern with regards to the existing wastewater system as a result of additional sewage flow from any hypothetical land use scenario would be increased cost of conveyance and treatment and increased flow velocity in mains.

2.9.6 Mitigation of Impacts

A hypothetical future configuration of the wastewater collection system to service the various development alternatives is as shown in Figure 25. This particular layout was developed to maximize the area of gravity sewer service to specific areas likely to be developed first. With this configuration, only a small portion of the study area is intended to be served by a sewage lift station. The balance of the area as shown can be served by gravity to either a connection point adjacent to the Elmira Road pump station or to a manhole in South Meadow Street near the K-Mart entrance. The capability of gravity sewer service to these areas assumes finished first floor elevations above the stipulated 500-year flood elevation.

2.10 Solid Waste

Tompkins County is responsible for the overall management of solid waste within the County and has established waste reduction, reuse and recycling programs. County-owned solid waste facilities include a recently constructed recycling and waste transfer station located on Commercial Avenue within the study area. Future plans call for the development of a household hazardous waste collection facility at this site. There are also nine established drop-off centers for the collection of recyclable materials. A private transfer station exists outside the City limits.

According to the County's Solid Waste Management plan, the County generated approximately 78,000 tons of residential, commercial and institutional waste in 1991. The City provides its residents with municipal collection of solid waste and delivers the waste to the Tompkins County Recycling and Solid Waste Center (TCRSWC) on Commercial Street that houses the County's transfer station. While two private collection companies handle approximately 75 percent of the commercial waste generated in the County, a number of smaller hauling companies also provide this service. The private waste collectors also deliver their waste to the municipal transfer station or to a privately operated transfer station. The waste is transported to the Ontario County Landfill in Flint, NY or the Seneca Meadows Landfill in Seneca, NY. The practice of exporting waste has been selected by the County for its long-term waste disposal needs.

Recyclables collection is provided through contract with a private collector, Superior, Inc. Curbside pickup for residences and small businesses is provided and materials are taken to the TCRSWC. Large businesses are required to recycle and independently arrange for collection or delivery of their recyclables to an appropriate facility. There are also nine recyclables drop off centers located throughout the county.

2.10.1 Impacts

Each of the proposed land use scenarios would impact solid waste management by increasing the amount of residential and commercial waste generated within the City. Alternative 6 features the development of 1,000,000 square feet of retail and 200,000 square feet of office space. The estimated increase in solid waste generated by this alternative would be approximately 1,000 tons per year for the office uses. A large portion of the waste would be high grade office paper and corrugated board, both of which are recyclable. The retail uses would result in the generation of approximately 4,000 to 4,500 tons of solid waste per year. Again the waste generated is expected to include large quantities of corrugated board as well as some paper and plastics that are recyclable.

According to Tompkins County Solid Waste Management Division, the Ontario County Landfill has sufficient long-term capacity to import solid waste and could handle wastes generated from additional development in the southwest corridor. While large commercial operations would continue to manage their own recyclable stream, the County's Commercial Avenue Recycling Center is also operating with a capacity in excess of that required to meet the recycling needs of increased development in the southwest area. Existing collection and disposal capacities are adequate to handle projected additional waste generation and programs are in place to encourage waste reduction, reuse and recycling of wastes. Therefore, no mitigation is required.

2.11 Plants and Animals

A field survey was also conducted by wildlife biologist Robert Wesley, to characterize the vegetation, habitat and wildlife within the study area. A literature and agency resource review was conducted to determine the extent to which plants and animals, including any rare or endangered species, were previously detected within the study area. Past reports have defined the boundaries of the Unique Natural Area referred to locally as the Negundo Woods. The full ecological report is in Appendix H.

2.11.1 Field Survey

The field survey was conducted in October and November of 1998. In the course of fieldwork, no rare species were found. Two locally scarce (known from six to 20 site in the Cayuga Lake drainage area) species were identified; Hackberry (*Celtis occidentalis*) and Germander (*Tucrium canadense*). The two species are described as not rare enough to warrant protection.

The study area exhibited a variety of habitats from wetlands to areas of mature floodplain forest. Figure 26 shows the natural features within the study area. The following is a brief description of habitat by parcel with emphasis on areas with unusual or significant features.

Southwest Park (Area A)

Much of the Southwest Park area is covered by young forest consisting of 20 to 40 year old stands of eastern cottonwood (*Populus deltoides*), box elder (*Acer negundo*) and red ash (*Fraxinus pennsylvanica*). Another large portion of the area serves as a stockpile area and is currently unvegetated. Wetland areas are found in the south-central area which are

dominated by reed canary grass (*Phalaris arundinacea*, giant reed (*Phragmites australis*), swamp sedge (*Carex lacustris*) and soft rush (*Juncus effusus*). Deer intensively uses the area. The degree to which the forest herbs are grazed suggests that the deer population is excessive.

Significant biological features include the forest west of the wetlands that harbors the locally scarce germander and hackberry.

City Parcel North of Southwest Park (Area B)

This property is owned by the City and is mostly forest with the exception of a power line cut. The age, structure, and species composition is like that of parcels E1, E2 and E3.

Cherry Street (Area C)

This parcel has upland forest, upland and wetland herbaceous meadow and two intermittent pond areas. Like much of the study area, this area has a history of disturbance and the forest is relatively young (20 to 40 years old). The dominant tree species is eastern cottonwood and white willow. The herb layer is strongly dominated by garlic mustard and stinging nettle. The abundance of stinging nettle is large enough to support populations of five locally uncommon or scarce species of butterflies, all of which are *Nymphalide* (brushfooted butterflies) which are migratory. Their appearance is described as sporadic.

Conrail Property Southwest and Parallel to the Railroad (Area D4)

This property includes areas of floodplain forest. Eastern cottonwood and box elder in the area are estimated to be 20 to 60 years old. The property also features a dense herb layer that while dominated by garlic mustard, remains more diverse than surrounding parcels. Motherwort (*Leonurus cardica*) and Stinging Nettle (*Urtica dioica*) are abundant. There is evidence that this area is heavily populated with deer.

Properties of Rueben Weiner (Areas E1, E2 and E3)

These parcels are located south of Nate's Floral Estates, including the driving range and forest west thereof. The forest in the southern part of the western edge of parcel E1 is the only mature vegetation here and is described in more detail below. Most of the area is young forest of *Populus deltoides* and *Acer negundo*. The trees are approximately 20-40 years old. The shrub layer varies from none at all to dense shrubs, consisting primarily of *Lonicera*. The herb layer is dense and comprised mostly of *Alliaria petiolata*. *Hesperis matronalis* and other herbaceous species are present in small amounts, many of which are not native. The driving range is built on fill and was planted with lawn grasses especially *Poa pratensis*.

Parcel E3 south of Nate's Floral Estates consists primarily of meadow vegetation dominated by *Phalaris arundinacea*. Under the power line also is meadow, dominated by *Phalaris arundinacea* and *Festuca elatior* (meadow fescue). The deer population is large and evidence of their presence is abundant especially in the forest.

The hedgerow in the southwest part of the parcel E1, forming the property boundary with Southwest Park, constitutes a significant remnant of old-growth floodplain forest. Very large trees of silver maple, eastern cottonwood, red ash and bur oak occur in the hedgerow, with somewhat less large ones in the forest to the east. One large bur oak may be the largest in the city (diameter 53", height 86') as it is the largest bur oak currently in the Tompkins County Big Tree Search database. This forest remnant should be considered to have special local importance. A few trees (mostly small) of hackberry (*Celtis occidentalis*), another locally scarce species occur in the area described above.

Levee (Areas F1, F2 and F3)

The site consists primarily of two fields bordering Negundo Woods. These fields were previously in agriculture. There is an area of sapling dogwoods in the north eastern portion of the site. No rare or scarce plant species were found on these properties. The Negundo Woods are documented as a significant ecological community.

Parcel Inside the Curve of the Old Railroad Bed (Area F6)

This parcel is significant in that it has the highest species diversity of the entire study area. This is due in large part to the intact areas of wetland found on site within the portion designated as substitute parkland. Goldenrods (*Solidago altissima*, *Solidago gigantea*, *Solidago gramaefolia* and *Solidago rugosa*) are found throughout the area. Small trees such as autumn olive (*Elaeagnus umbellata*) and black walnut (*Juglans nigra*) are found to be invading the parcel. Other native species on site include ox eye (*Heliosis heliathoides*), hairy fruited sedge, (*Carex trichocarpa*), wild rye (*Elymus virginicus*) and Germander (a locally scarce species). This parcel also contains areas of abandoned agricultural land in addition to the scattered areas of wetlands. Deer frequent the area.

Overall, the study area was much used by birds, especially the areas along the flood control channel. Typical mammal species likely to inhabit the study area include skunks, raccoons, cottontail rabbits, and woodchucks. The deer population in the study area has been described as being potentially excessive as evidenced by grazing patterns and trails.

Features of importance include the vestiges of once more dominant floodplain forests. Because of their location near areas developed for trade and transportation, these former floodplain forests were settled early, with few good examples remaining today.

2.11.2 Literature Search

The literature and agency resource review involved an examination of the botanical records of rare species in or near the study area. The New York Natural Heritage Program Office in Latham, New York as well as unpublished herbarium records at Cornell University were consulted. In the context of the literature/records review, "rare" means that the species in question was identified at five or fewer sites in the local area (Cayuga Lake Drainage area). Based on The Nature Conservancy (TNC) ranking, statewide and global measures of scarcity were also associated with each rare species identified in the literature review. Using a scale of one to five, a one (G1/S1) denotes the category of highest rarity and a five (G5/S5) classifies a species as "demonstrably secure."

The field survey portion of the study found no rare or endangered species in or near the study area. Nine sightings of rare species within or near the study area were recorded in previous investigations. Two sightings of spreading wild chervil (*Chaerophyllum procumbens*) that is now believed to be no longer occurring within the study area were noted. All nine of the sightings had an associated global frequency of G3 to G5 and a statewide frequency of between S1 and S2/S3. The ecological report noted that none of the occurrences were actually found on the field survey parcels. Due to the land-use history of the area (agriculture, dumping, filling, etc.) it appears unlikely that any of these rarities could be found today. Table 2-1 lists the rare species recorded within the general vicinity.

TABLE 2-1
LITERATURE SEARCH OF RARE SPECIES

Species/Name	Location Found – Date Last Sighted	TNC Global Ranking	TNC Statewide Ranking
<i>Agastache nepetoides</i> /Yellow giant-hyssop	Hillside south of Larch Meadows – Date N/A	G3G5	S2S3
<i>Agastache nepetoides</i> /Yellow giant-hyssop	Near southwest corner of Cayuga Lake – Date N/A	G3G5	S2S3
<i>Chaerophyllum procumbens</i> , spreading wild chervil	Negundo Woods – 1894	G5	SH
<i>Chaerophyllum procumbens</i> , spreading wild chervil	Mouth of Buttermilk Falls – 1870	G5	SH
<i>Clemmys muhlenbergii</i> /Bog turtle	Larch Meadows – 1940	G3	S2
<i>Equisetum palustre</i> /March Horsetail	Larch Meadows – Date N/A	G5	S1
<i>Gynocladus dioica</i> /Kentucky coffee tree	Slope between Cliff and Hector Streets – Date N/A	G5	S1
<i>Hydrastis canandensis</i> /Golden seal	East side of inlet valley north of Lick Brook – 1934	G4	S2
<i>Potamogeton hillii</i> /Hill’s pond weed	Cayuga Inlet – Date N/A	G3	S2

TNC – The Nature Conservancy

SH –Not known in New York State but expected to be rediscovered

2.11.3 Impacts

The ecological review of the study area did not identify any rare or endangered species within the study area. Two plant species that are locally scarce were noted but are not rare enough to warrant protection. Therefore, while adoption and implementation of the Southwest Area Land Use Plan can be expected to result in the disturbance of the ecology throughout the study area with the exception of the area to be designated as substitute park land, these disturbances are not considered to be a threat to any rare or endangered species.

The Negundo Woods area, described as a significant ecological community, would be largely protected through its inclusion in the area designated as substitute parkland. The Negundo Woods cover an area to the north and south of the meandering Cayuga Inlet.

Development in accordance with the guidelines of the Southwest Area Land Use Plan is not expected to have significant adverse impacts on plant and animal resources in the study area.

2.12 Cultural Resources

Cultural resources within the study area include both historic and archaeological resources. To assess the potential for on site cultural resources in a given area, Stage I Cultural Resource Surveys have been completed for the undeveloped portions of the study area. These studies included literature review, site inspection and subsurface investigations (as necessary).

Cultural resources surveys were prepared in 1994, 1998 and 1999 for the various parcels which comprise the undeveloped portion of the study area. The background research for all three reports on the City's southwest corridor indicated that the area may include prehistoric trails and settlement areas. Native American occupation of the area is evidenced by eight prehistoric sites within 2 miles of the study area. Historic documents indicate that an eighteenth century Cayuga village known as Coreogonal was located approximately 3,000 feet south of the study area. Prior to the establishment of Coreogonal, another native village is reported to have been located at the head of Cayuga Lake. While the precise location of these villages has not been identified, related artifacts have been identified within the general area but outside the study area.

Because the literature and map review indicated a high potential for prehistoric sites, a subsurface investigation (Stage 1b) was conducted. The stage 1b search involved both examination of plowed transects and test pits. Parcels F1, F2 and F3 were the proposed site of a discount store for which a cultural resources survey was completed in 1994. Testing uncovered no prehistoric material. While some historic material was identified, the density and variety of historic material was not sufficient to warrant further testing.

The cultural resources survey for the Southwest Park completed in September 1998, concluded that the portion of the Park which served as a former dump (nearly 60 percent of the property) should not undergo Stage 1b investigations. The undisturbed remainder of the property could contain potentially intact prehistoric sites and underwent field testing in January 1999. Subsurface testing included investigation of 554 test pits at 15 meter intervals. The test pits contained cultural material, chert non-cortical flakes in mixed deposits and historic artifacts. No further archaeological work was recommended for this site.

The Stage 1b report also evaluated the Cherry Street area. This area (parcel C) is located between the flood control channel and the Conrail lines. The subsurface investigations at this location included 119 test pits and yielded one prehistoric site in the Cherry Street area (SUBi-1953). The Cherry Street site is of unknown temporal affiliation. Two additional isolated prehistoric artifacts were recovered from channel fill. While the results of the subsurface investigations at the Cherry Street location indicate that cultural resources would be impacted by the proposed project, the sites lack sufficient research potential to qualify for eligibility to the National Register of Historic Places. The researchers concluded that due to the low research potential, the proposed action would not impact a significant site.

Subsurface investigations at the levee parcels F-4 and F-5 yielded no prehistoric artifacts and 16 historic artifacts. No further archaeological work was recommended for this area. The former dump site parcels (E1, E2, and E3) have been significantly disturbed by the dumping during the 1950's and 1960's. Therefore, no archaeological testing was recommended nor conducted for this parcel. A cultural resources survey was not conducted for the portion of parcel F-6 that is designated as substitute park land.

2.12.1 Impacts

The cultural resources survey did not identify any significant findings with regard to prehistoric or historic resources within the study area. The New York State Office of Parks, Recreation and Historic Preservation confirmed these conclusions stating in a March 25, 1999 letter that the project would have no impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places. A copy of this letter can be found in Appendix I. Therefore, no mitigation is required.

2.13 Community Character

2.13.1 Area Residential Neighborhoods

The study area itself is largely devoid of residential areas with the exception of Nate's Floral Estates (Figure 1, Area E) and an existing single home off Elmira Road south of the flood control levee (Figure 1, Area F-4). Adjacent to the study area, there are residential land uses along Spencer Street and Floral Avenue west of the Flood Control Channel. These neighborhoods are predominantly single family homes. To the north of the study area are several residential areas included in the neighborhood street analysis (Section 2.7.2). Within this area bounded Court Street to the north, Cayuga Street to the east, NY Route 13 to the west, and Spencer Street to the south, there is a mix of residential and commercial land uses at varying densities.

2.13.2 Impacts and Mitigation

The existing single family home south of the flood control levee is expected to be replaced by commercial development in conjunction with implementation of the Plan. Potential adverse noise and visual impacts to remaining residential uses in the study area would be minimized by a 100-foot landscaped buffer area (see Section 2.6 Visual Resources and Photo Simulation V8). The future circulation pattern is also designed to provide more direct access from Nate's Floral Estates to existing major retail uses and potential new development while minimizing the potential for increased through traffic. Depending on the density of development and the extent of new circulation required to handle projected traffic, improved access may provide a pedestrian/bicycle only linkage or a multi-modal street suitable for pedestrian, bicycle and vehicle access.

Views V6 and V7 show the potential visual impact from the most sensitive residential sites identified directly adjacent to the study area. As described more fully in Section 2.6 Visual Resources, existing views from these locations are dominated by existing commercial buildings

and parking areas and would not be significantly adversely impacted by the potential development envisioned in the Plan.

As indicated in Section 2.7.2 Neighborhood Street Analysis, traffic volume increases on Spencer Street and Floral Avenue are projected to be less than 5 percent under Alternative 5. Other residential streets analyzed in Section 2.7.2 are expected to experience mitigated traffic volume increases of 7 to 10 percent. Such volume increases are not expected to result in significant adverse noise impacts. Residences in these areas are also more than 225 feet from potential development activities and are therefore not expected to be adversely impacted by site construction or operational activities. Construction of traffic calming devices would likely produce some adverse periodic noise impacts along some residential streets.

2.13.3 Economic Character

The dominant retail activity center in Tompkins County is the Triphammer Road area in the Village of Lansing. This area includes Pyramid Mall (four general merchandise anchors and 99 other stores in 600,000 square feet of Gross Leasable Area, GLA), Cayuga Mall (197,300 square feet GLA) and Triphammer Shopping Center (178,000 square feet GLA). The most recent retail inventory of Downtown Ithaca (1994) identified 358,800 square feet of occupied space. The current retail vacancy rate for downtown is estimated at 14 percent, higher on the Commons where rents are also higher. No vacancy information is available for other commercial areas in and adjacent to the city of Ithaca. Based on the inventory of vacant downtown spaces, typical retail units are 2,500 square feet

Table 2-1 shows the distribution of occupied retail in downtown Ithaca in 1994.

TABLE 2-1
RETAIL SALES AND HOUSEHOLD CONSUMER EXPENDITURE POTENTIAL
TO 30 MILES, 1999
(\$000)

	Total Retail Sales 15 mile Ring	15 mile Ring Consumer HH Spending	15-30 mile band Consumer HH Spending	Total Consumer HH Spending
Food Store Sales	\$189,609	\$146,201	\$350,570	\$496,770
Eating & Drinking Place Sales	69,754	91,453	217,996	309,448
General Merchandise Sales ⁴	280,384	229,033	559,582	788,615
Automotive Dealer Sales	177,899	78,461	158,166	236,627
Gasoline Service Station Sales	57,213	56,880	113,953	170,833
TOTAL	\$774,859	\$602,027	\$1,400,266	\$2,002,293

Source: Claritas, Inc. and the Office of Thomas J. Martin

The retail mix of downtown is heavily weighed to eating and drinking places and specialty retail in the apparel, home furnishings, and miscellaneous shopper's goods categories. Such offerings are orientated to downtown workers seeking convenience goods and services, area residents living in close proximity to downtown or those seeking specialty goods and services, as well as students and tourists. The closing of Woolworth's, downtown last general merchandise retailer, highlights the long term transition of downtown from a traditional regional comparison shopping area to a convenience and specialty shopping area not directly competitive with comparison shopping centers such as the Triphammer Road area or other regional shopping centers in Cortland (283,000 GLA), Horseheads/Elmira (902,000 GLA), Binghamton (858,000 GLA), Waterloo (GLA not available), and Syracuse (1,500,000 GLA).

There are three other commercial areas of varying character in the city of Ithaca and an additional 110,000 square feet of retail space just outside the city at East Hill Plaza. Collegetown encompasses 138,000 square feet of retail space including the 35,000 square foot Cornell University Store and caters almost exclusively to Cornell University students. The West End and Inlet Island are older commercial areas that have been primed for redevelopment by public planning, infrastructure, and business assistance programs. West End retail space is estimated at 137,000 square feet. No information is available on the existing retail inventory of Inlet Island. Elmira Road is the city's prototypical automobile-intensive commercial strip and the location of development proposed in the Southwest Area Land Use Plan. The City's only discount general

⁴ Includes sales in the following categories: apparel, building materials, hardware, drugstores, general merchandise and miscellaneous merchandise

merchandise store and its two largest grocery stores represent 255,000 square feet of space in the Elmira Road corridor.

Within Tompkins County as a whole population growth as estimated by the Department of Labor was a modest one percent from 1990 to 1996. The city of Ithaca is estimated to have lost population (3.5 percent) during the same period. Non-students represented 55 percent of city residents and 28 percent of county residents in 1990, though 74 percent of city residents and 89 percent of county residents are included in the household population not living in group quarters such as dormitories, jails, and nursing homes. The high proportion of student residents may explain why per capita income and median household income for the city of Ithaca and Tompkins County are 56 and 54 percent and 80 and 84 percent respectively of those for the State of New York as a whole.

The three largest employers in Tompkins County are educational institutions: Cornell University 8,800 employees, Ithaca College 1,316 employees, and Ithaca City School District 1,200 employees. Together these employers represent approximately 20 percent of county employment. The Services sector as a whole has expanded more than 100 percent since 1981 countering employment declines in the manufacturing (31 percent) and government (8 percent) sectors. Overall, non-agricultural employment increased 39 percent from 1981 to 1996, with nearly all of the increase occurring before 1991. In spite of modest recent employment growth, unemployment figures for May 1999 are lower for the city of Ithaca (2.3 percent) and Tompkins County (3.2 percent) than for New York State as a whole (4.9 percent).

Information on existing household spending and retail sales is provided for the 14850 zip code and the area within 15 miles of the potential development area in southwest Ithaca. Household spending information is also presented for the ring between 15 and 30 miles from the potential development area. Figures 27 and 28 depict these geographic analytical units. The data sources and methodologies for collecting information on household spending and retail sales differ and are therefore not strictly comparable. Table 2-2 summarizes existing household retail spending and retail sales in the geographic segments analyzed.

TABLE 2-2
 RETAIL SALES AND HOUSEHOLD CONSUMER SPENDING
 ITHACA 14850 ZIP CODE AND WITHIN 30 MILES OF STUDY AREA
 1999
 (\$000)

	14850 Zip Code		Within 15 Miles of Study Area		15-30 mile band
	Retail Sales, 1997	Consumer Spending	Retail Sales, 1999	Consumer Spending	Consumer Spending
Food Store Sales	\$139,431	\$74,853	\$189,609	\$146,201	\$350,570
Eating & Drinking Place Sales	58,897	54,530	69,754	91,453	217,996
General Merchandise Sales ¹	236,633	107,076	280,384	229,033	559,582
Automotive Dealer Sales	142,100	34,855	177,899	78,461	158,166
Gasoline Service Station Sales	\$36,546	\$30,464	\$57,213	\$56,880	113,953
TOTAL	\$613,607	\$301,778	\$774,859	\$602,027	\$1,400,266
¹ Includes sales in the following categories: apparel; building materials & hardware;					
Home furnishings, drugstores; general merchandise; and miscellaneous sales					
Source: Claritas, Inc. and the Office of Thomas J. Martin					

The retail sales numbers include spending by students, tourists, and others from outside the area that are not included in the household consumer spending. Within the 14850 zip code locally generated spending represents 47 percent of local retail sales. Based on available information, locally generated automotive sales and service and eating and drinking place sales account for more than three-quarters of local sales and 60 percent of general merchandise sales are not accounted for by local household spending. Household spending within 15 miles of the potential development area represents 78 percent of estimated retail sales in the area. Locally generated eating and drinking represent 131 percent of sales in this larger area and automotive sales represent less than 44 percent of sales.

The most recent estimates of the geographic distribution of retail sales are from 1994. Table 2-3 estimates that downtown represented 20 percent of area retail sales in 1994.

TABLE 2-3
ESTIMATE OF CURRENT RETAIL SALES, ITHACA PRIMARY MARKET AREA

Ithaca Primary Market Area	% of Total Retail	Estimated Retail Square Feet ¹	Estimated Average Sales Per SF for District	Estimated Current Retail Sales	Percent to Total
Downtown	20.0%	403,800	\$180	\$72,684,000	18.9%
Collegetown/East Hill	6.8%	138,000	\$180	\$24,840,000	6.5%
Collegetown	5.1%	103,000			
Cornell University Store	1.7%	35,000			
Elmira Road Corridor	19.4%	392,800	\$190	\$74,632,000	19.4%
Wegmans	3.9%	79,100			
Tops Supermarket	3.3%	66,900			
Big K (K-Mart)	6.4%	109,000			
Misc. West End Retail	6.8%	137,800			
Within Ithaca City Limits	46.3%	934,600	\$184	\$172,156,000	
Triphammer Road Corridor	53.7%	1,085,300	\$195	\$211,633,500	55.1%
Pyramid Mall	29.7%	600,000			
Cayuga Mall	9.8%	197,300			
Triphammer Shopping Center	8.8%	178,000			
East Hill Plaza	5.4%	110,000			
TOTAL of All Areas	100.0%	2,019,900	\$190	\$383,789,500	100.0%

¹Excludes free standing restaurants, auto dealers, and convenience food stores. Totals rounded to nearest 100 square feet.
Source: RKG Associates, 1994 and the Office of Thomas J. Martin

Recent fiscal conditions in the city of Ithaca have been problematic. From 1993 to 1997 the taxable assessed value of the city's real property declined 7.7 percent. Based on 1998 tax rates such a decline represents an annual revenue loss to the city of \$146,000. Other factors that constrain the city's ability to raise revenues for municipal services include the high proportion of tax exempt property (59 percent) and the need to support aging infrastructure and a wide range of community services. In 1993 the city has a greater share of revenue coming from real property tax than from non-property tax sources (sales and use taxes). By 1997 slightly less than half of revenues came from property taxes. Increased sales tax revenues in particular have been crucial to the city's ability to maintain revenues and fund services.

2.13.4 Impacts and Mitigation

The Ithaca consumer market sales potential includes all spending by households within 15 miles of the potential development area and one-half of the spending by households in the band between 15 and 30 miles of the potential development area. The Ithaca retail sales potential also includes spending by students and tourists.

Table 2-1 summarizes retail spending by each of the market segments and compares the total retail sales potential to estimated current retail sales. As indicated in Table 2-1, the total sales potential of all market segments is approximately \$600 million greater than current retail sales occurring within 15 miles of the southwest area potential development area. The greatest proportion of sales (\$260 million) not being captured by retailers in the 15 mile ring is in the

general merchandise category which includes apparel, building materials and hardware, home furnishings, drugstores, general merchandise and other miscellaneous retail sales. Consumers typically comparison shop much more for goods in these sales category than in the food categories which are more convenience oriented.

TABLE 2-1
ITHACA TOTAL CONSUMER MARKET SALES POTENTIAL
AND ESTIMATED POTENTIAL SALES LEAKAGE
(\$000)

Market Segments Sales Potential							
Sales Category	Actual Retail Sales, 15 mile Ring	Consumer spending 15 mile ring	Share of consumer spending 30 mile band	Students Spending	Traveler and Tourist Spending	Total Ithaca Area Sales Potential	Potential Sales Leakage
Food Store Sales	\$189,609	\$146,201	\$175,285	\$2,063		\$323,548	\$133,939
Eating & Drinking Place Sales	69,754	91,453	108,998	12,642	7,130	220,222	150,469
General Merchandise Sales ¹	280,384	229,033	279,791	27,375	2,570	538,769	258,385
Automotive Dealer Sales	177,899	78,461	79,083			157,544	(20,355)
Gasoline Service Station Sales	57,213	56,880	56,977			113,857	56,644
TOTAL SALES	\$774,859	\$602,027	\$700,133	\$42,080	\$9,700	\$1,353,940	\$579,081

¹ Includes sales in the following categories: apparel; building materials & hardware; drugstores; general merchandise; and miscellaneous sales

Notes:

Students: Student expenditures derived from budget provided by Cornell University. There are an estimated 10,300 students in group quarter counted as living in households.

Tourist expenditures based on 1997 tourism figures from the Tompkins County Economic Development Plan

350,000 visitors in paid accommodations spending \$15 for food and \$6 for retail per capita

150,000 day trip visitors spending \$8 for food and \$2 for retail per capita

85,000 VFR (visit friends and relatives) travelers, spending \$8 for food and \$2 for retail per capita

Source: The Office of Thomas J. Martin, and Claritas, Inc. 1318 Claritas

Based on sales of \$190 per square foot, required retail sales to support the hypothetical development scenarios range from \$76 million to \$190 million. Potential sales at the new stores are estimated to come from three sources:

30 to 34 percent from correction of leakage as summarized in Table ___ (II-9)

30 to 34 percent from attracting additional import sales from the 15 to 30 mile band

32 to 40 percent transferred from existing area stores

Estimated transferred sales would total \$45.6 to \$60.8 million and would be drawn from existing shopping areas as follows:

- 10 percent from downtown
- 35 percent from Elmira Road Corridor
- 53 percent from Triphammer Road Corridor/East Hill Plaza
- 2 percent from Collegetown

The impact of sales transferred from existing area stores would be lessened somewhat by new sales attracted to the area; expanded shopping opportunities will attract new shoppers to the area and such shoppers would visit both new and existing stores. Each \$10 in additional imported sales is estimated to generate \$.75 in sales in existing retail areas. New sales attracted to the area are estimated at \$5.1 to 9.7 million distributed as follows:

- 30 percent downtown
- 50 percent Elmira Road Corridor
- 19 percent Triphammer Road Corridor/East Hill Plaza
- 1 percent Collegetown

Table 2-2 summarizes sources of retail sales at new stores in southwest Ithaca and the calculation of net sales transferred from existing area stores.

TABLE 2-2
SOURCES OF RETAIL SALES ESTIMATES FOR
SOUTHWEST AREA RETAIL DEVELOPMENT

	Square Footage	Sales Potential In New Southwest Park Retail Development By Scenario	Percent of Sales Derived by Correction of Sales Leakage	Percent of Sales Derived From Attracting Import Sales	Percent of Sales Derived From In Market Competition	Sales Derived by Correction of Sales Leakage	Sales Derived From Attracting Import Sales	Sales Derived From In-Market Competition	Less New Sales Attracted to Ithaca Area Stores By New Shoppers and Retained Shoppers	Net sales derived from other Ithaca area Stores
Assumed Retail Sales Per Square Foot	\$190.00									
Scenario 1	600,000	114,000,000	30%	30%	40%	34,200,000	34,200,000	45,600,000	5,130,000	40,470,000
Scenario 2	400,000	76,000,000	30%	30%	40%	22,800,000	22,800,000	30,400,000	3,420,000	26,980,000
Scenario 3	500,000	95,000,000	30%	30%	40%	28,500,000	28,500,000	38,000,000	4,275,000	33,725,000
Scenario 4	500,000	95,000,000	30%	30%	40%	28,500,000	28,500,000	38,000,000	4,275,000	33,725,000
Scenario 5	800,000	152,000,000	32%	32%	36%	48,640,000	48,640,000	54,720,000	7,296,000	47,424,000
Scenario 6	1,000,000	190,000,000	34%	34%	32%	64,600,000	64,600,000	60,800,000	9,690,000	51,110,000

Source: The Office of Thomas J. Martin. 9/27/1999
1318data.Table III-3.

Table 2-3 summarizes the distribution of net sales loss by local retail areas based on the six hypothetical land use scenarios analyzed. Depending on the scale of development, existing stores are likely to lose \$27 to \$51 million in sales. As described above, such sales losses are expected

to impact most heavily on the Triphammer and Elmira Road Corridors (7 to 14 and 12 to 22 percent net sales losses respectively) and less heavily on downtown (3 to 5 percent net sales loss).

TABLE 2-3
ESTIMATE OF DISTRIBUTION OF NET SALES LOSS BY LOCAL MARKET AREA
DUE TO THE SOUTHWEST AREA RETAIL DEVELOPMENT

	Downtown	Elmira Road Corridor	East Hill Plaza / Triphammer Road Corridor	Collegetown\ East Hill	Total
Scenario 1	\$3,021,000	\$13,395,000	\$23,193,300	\$860,700	\$40,470,000
Scenario 2	2,014,000	8,930,000	15,462,200	573,800	26,980,000
Scenario 3	2,517,500	11,162,500	19,327,750	717,250	33,725,000
Scenario 4	2,517,500	11,162,500	19,327,750	717,250	33,725,000
Scenario 5	3,283,200	15,504,000	27,615,360	1,021,440	47,424,000
Scenario 6	\$3,173,000	\$16,435,000	\$30,382,900	\$1,119,100	\$51,110,000

Source: The Office of Thomas J. Martin

The previous analysis is summarized from the Impact on Community Character Study (Appendix J). The report evaluated the potential of a proposed mixed-use development in the Southwest area of the City of Ithaca, New York to negatively affect other areas such that blighted conditions could occur elsewhere. The circumstance being investigated that could create blighting conditions in Ithaca is one in which retail sales are shifted from an existing commercial district to the proposed development to an extent that either 1) a predominance of buildings or structures would be deteriorated to the point of being unfit or unsafe for use or occupancy, or 2) a predominance of economically unproductive buildings or structures would require redevelopment in order to prevent further deterioration or jeopardize the economic well being of area residents and business owners. The degree to which blighting conditions could potentially occur in downtown Ithaca as the result of the development of the Southwest Area is measured against this definition. Impacts and costs to the downtown are measured, and mitigation strategies are offered as a means of minimizing the risk of blighting conditions, or to correct such conditions.

The retail market analysis in Appendix J found that the new retail development would attract substantial new volumes of retail sales to Ithaca in the comparison or general merchandise categories. Retail development of the type proposed would “recapture” substantial portions of the retail purchases local area residents make outside of the local area and would attract new customers to Ithaca from beyond the local area. These new sales and shoppers in the local Ithaca area would offset some of the sales losses existing retailers are likely to experience due to the substantial new competition created in the Southwest area. The downtown area would be much

less affected by the new project than stores in existing retail areas that serve general shopping needs. The downtown area serves the local resident, student and university employee markets, has a captive market in downtown employees and visitors, and has a distinct and unique retail assortment that is very different than the comparison type shopping implied by the retail size and types under consideration. Therefore, there is comparatively little competitive overlap between downtown and the proposed Southwest area retail development.

With an estimated 358,800 square feet in downtown, a loss of 3 percent to 5 percent of sales on a square foot basis is 10,800 square feet to 17,900 square feet. In a worst case assessment of the situation, all of this space would go vacant. However, it is unlikely that certain businesses would absorb all competitive effects and the remainder none. It is more likely that all businesses that have any competitive product lines would share some of the competitive pressure. Therefore, it is unlikely that there would be a one-for-one trade-off in lost retail sales with loss of occupied retail space. Rather, it is more likely that there would be a combination of the two effects with some retailers losing some sales, and the possibility of a limited number of store closings.

A different assessment of the competitive effect on the downtown area is that 3 percent to 5 percent of customers would be drawn out of the downtown area. This might affect not only the retailers making the sales, but non-retail businesses that rely on foot traffic for part of their market support. Again, while this would be a negative trend, it would not be an overwhelming competitive pressure, and would not represent a threat to the general business climate of the downtown area.

The retail component is assumed to be phased in during a two- to six-year period depending on the development scenario. This would allow an opportunity for local businesses to adapt to the changing competitive circumstances.

Following is a discussion of measures that may be put into effect to mitigate the potential for blighting impacts on the downtown area of Ithaca in response to the competitive pressures that may be created as a result of new retail development in the Southwest area.

Competitive Response by the Downtown Businesses. In the normal course of business, retailers are constantly responding to changes in fashion, market channels, new product lines, new opportunities and new competition. Sales competition of the magnitude projected for the downtown area from the Southwest area retail development is within the magnitude to allow reasonable response on the part of downtown retailers. Such responses could, and should, include the following:

- ◆ Placing further emphasis on specialty retail goods that may further secure the downtown's retail niche.
- ◆ Providing customer service typically unavailable in mass merchandise environments.
- ◆ Targeting tourists, visitors and the new shoppers attracted by the new retail development as potential customers.
- ◆ Reinforcing the activities of the Downtown Business Improvement District (BID) in business retention, development, marketing and promotion.

In addition to these internal responses to the potential competitive pressures of the new retail development, there may be several mitigation measures that lower the risk of negative impacts to the downtown area from the Southwest Area retail development. These would reinforce the response which businesses have to the ongoing changes and competition in the economic environment. In addition, such mitigation measures would proactively support the downtown as a focus of the economic and social life of Ithaca. These potential mitigation measures include:

- ◆ **Signage.** As a central place, there is a “spoke” of roads leading to Ithaca from all directions. Creating a signage program at all gateway locations to the City which identify the downtown as a desirable destination to shop, dine or be entertained will aid downtown businesspeople to better capitalize on the existing market potential and the additional trips to Ithaca occasioned by the new destination retail offerings in the Southwest area.
- ◆ **BID Funding.** Continued funding of the downtown Business Improvement District will help to mitigate the risks to the downtown area. BID funding could be increased using some part of the increased tax revenue expected from the Southwest Area development. Following is an outline of downtown marketing and management strategies to promote retail and commercial activity in downtown Ithaca.
 - **Management and Recruitment.** Downtown areas often adopt coordinated approaches to operating as a business unit
 - **Downtown Marketing.** A pool of marketing funds to be used to fund several of the following: co-op advertising, direct marketing, joint promotion, publicity and events.
 - **Physical Improvements.** This type of program can also be used to improve the downtown business physical environment, including streetscape, transportation, parking, façade programs, small business loan programs etc.
- ◆ **Develop Tourism Base.** Downtown Ithaca, in a competitive response to additional regional retail competition, can be organized and operated as a single cohesive commercial district. The idea is not to replicate a mall, but to use the principles of a focused business mix, high quality standards, provision of parking and a safe clean environment, and effective marketing that will allow the downtown to best serve its market niche.
 - Increase tourism base by highlighting city attributes and marketing locational advantage of Ithaca over other areas in region.
 - Support Capital projects that enhance the entertainment base of the downtown area such as the State Theater project.

Table 2-4 provides maximum employment estimates for each of the development scenarios at full build-out and full occupancy. The employment generated by light industrial, office and residential development are expected to occur in response to market forces within the Ithaca economy generally with or without development as envisioned by the Southwest Area Land Use Plan. The retail jobs would be net new to the area except to the extent that they replace retail jobs currently located elsewhere in the city.

TABLE 2-4
FULL BUILD-OUT EMPLOYMENT ESTIMATES FOR DEVELOPMENT SCENARIOS

Alternative	Overall Size (sq. ft.)	Maximum Employment				Total
		Retail	Office	Light Industrial	Residential	
1	1,050,000	1,200	1,000	400	0	2,600
2	600,000 + 600 units	800	400	200	12	1,412
3	500,000	1,000	0	0	0	1,000
4	750,000	1,000	1,000	0	0	2,000
5	1,000,000	1,600	800	0	0	2,400
6	1,250,000	2,000	1,000	0	0	3,000

Source: Center for Urban Policy Research and Office of Thomas J. Martin

Due to the low unemployment in the Ithaca area some in-migration is anticipated as a result of potential development in southwest Ithaca. The impact analysis estimates half of office employment (500 jobs) and three-quarters of managerial or supervisory retail jobs (150 jobs) would be filled by people re-locating to the Ithaca area. Thirty percent of Tompkins County residents live in the city of Ithaca and a similar proportion of in-migrants are expected to live in the city. Based on a 2.25 average household size, such relocations would mean 439 new residents in the city of Ithaca. Population expansion of 1.2 percent over the build-out period is expected to have a minimal impact on the character or infrastructure of the city of Ithaca.

Table 2-5 and Table 2-6 document the expected sales and property tax revenue benefits at full build-out for the city of Ithaca. Based on the hypothetical development scenarios analyzed, full build-out is expected to occur sometime between year 2 and year 16. Combined city revenues from Southwest area development at full build-out range from \$1.2 to \$3.1 million. Tompkins County (\$.6 to \$2.0 million) and the Ithaca Central School District (\$0.7 to \$2.0 million) are also expected to benefit from increased sales tax and/or property tax revenues. More detailed information on the fiscal impacts for the City of Ithaca, Tompkins County, the Ithaca Central School District and the State of New York can be found in Appendix J.

TABLE 2-5
SALES TAX REVENUE AT FULL BUILD-OUT, CITY OF ITHACA

Alternative	Square Feet of Retail	Net New Sales to City of Ithaca	Sales Tax	Retail Sales Tax Revenue to City of Ithaca
1	600,000	\$51,123,300	2%	\$971,343
2	400,000	34,082,200	2%	647,562
3	500,000	42,602,750	2%	809,452
4	500,000	42,602,750	2%	809,452
5	800,000	77,471,360	2%	1,471,956
6	1,000,000	\$108,472,900	2%	\$2,060,985

Source: The Office of Thomas J. Martin.

TABLE 2-6
SALES TAX REVENUE AT FULL BUILD-OUT, TOMPKINS COUNTY

Alternative	Square Feet of Retail	Net New Sales to Tompkins County	Sales Tax	Retail Sales Tax Revenue to Tompkins County
1	600,000	\$27,930,000	2%	\$530,670
2	400,000	18,620,000	2%	353,780
3	500,000	23,275,000	2%	442,225
4	500,000	23,275,000	2%	442,225
5	800,000	49,856,000	2%	947,264
6	1,000,000	\$78,090,000	2%	\$1,483,710

Source: The Office of Thomas J. Martin.

The proposed Southwest area development will create additional fiscal costs. The City of Ithaca Police estimates a need for five new officers, at an estimates cost of \$150,000 per year plus purchase and operating costs for two new police vehicles. Though the City of Ithaca Fire department does not foresee needing any budgetary adjustments, it does project an increase in activity in the vicinity of the proposed development, largely due to traffic accidents. This additional activity might ultimately have budgetary consequences. The City of Ithaca Public Works department has produced a 20-year maintenance schedule for the development, which adds an estimated \$105,575 to its annual operating cost, not including personnel. As well, there may be additional education costs. The extent of these costs would depend on the extent to which any new students create little need for new staff and capital, or whether they would create much lower direct, “per-student” costs. The Ithaca City School District did not provide information to make this judgment. However, the stable population of the city and existing capacity in the

schools are indicators that this project is not likely to have major impacts on School District budgets.

The project will bring substantial new fiscal revenues to the City and the County, with the estimation by City officials that there will be relatively low additional service provision costs. In addition, these new revenues can be used to support and enhance City services, which in turn improves the quality of life in the city's neighborhoods, thus strengthening the future viability of the City as a whole.

3 Unavoidable Adverse Impacts

The City's action to adopt and implement the Southwest Area Land Use Plan may result in adverse environmental impacts that cannot be avoided. Such unavoidable impacts occur regardless of the number and magnitude of mitigation measures proposed. The adverse impacts resulting from study area development are summarized below.

The type of development to occur would be largely market driven, resulting in one of a number of land use alternatives. Construction activities related to each of these land use alternatives would result in the generation of temporary and intermittent increases in noise levels. Construction processes and heavy vehicle travel to and from the site may generate noise levels in excess of 67 dBA at 50 feet. Construction activities may also result in temporary and intermittent production of airborne dust and general disruption. All construction impacts would be short term and temporary in nature and would be mitigated to the extent practicable.

Other related unavoidable impacts include visual changes to the study area due to both building construction and removal of vegetation. Elevated views to the study area would be more significantly impacted by development than other views to the study area. Visual impacts would be mitigated to a certain extent through the establishment of landscaped buffers per the proposed design guidelines. However, some degree of change in visual appearance is to be expected as a result of study area development.

It is likely that vegetation would be cleared to accommodate construction. As reported in Section 2.11, construction activities would not have an adverse impact on any endangered or rare plant species. However, a number of mature trees (bur oak, cotton wood, etc.) can be expected to be removed.

4 Alternatives to Proposed Action

The action under consideration in this GEIS is the adoption and implementation of the Southwest Area Land Use Plan. The “no action” alternative is a reasonable alternative to the adoption and implementation of the Plan, and involves the continuation of present land uses with development opportunities managed through the existing framework of site planning and zoning regulations. Under the no action alternative, development of several parcels within the study area would still occur but with unmitigated, adverse traffic, visual, wetland, buried waste and drainage impacts.

As described in the traffic study, development of the study area would result in a decrease in the level of service eight of the 27 intersections included in the traffic analysis. This includes three intersections that would operate at a level E or F. The no action alternative does not offer an equivalent opportunity to implement a coordinated traffic calming program in residential neighborhoods in the study area.

Visual impacts under the no action alternative would include a decrease in the visual continuity of the study area, particularly from elevated views. Changes in the soft texture and color of the existing landscape would also be expected under the no action alternative without the opportunities for the implementation of a coordinated mitigation effort to include the installation of landscaped buffers as proposed under the draft design guidelines.

With respect to wetlands and storm water management, the no action alternative would likely have both individual and cumulative effects on study area drainage.

Under the no action alternative, the types of development possible would be limited and may not accommodate the public need for additional residential, commercial/retail space. Of equal concern is the ability of the current land use patterns to adequately meet the public need for additional accessible parkland. Under current land use and zoning, the conversion of portions of the levee area to substitute parkland may not be realized.

5 Irreversible and Irretrievable Commitment of Resources

The adoption and implementation of the Southwest Area Land Use Plan would likely result in some degree of irreversible or irretrievable commitment of resources. Land development activities would involve the irreversible commitment of land resources, building supplies, labor and energy resources.

Study area development in accordance with one of the six possible land use alternatives presented would result in the conversion of undeveloped land to buildings and related parking/access facilities.

During the construction process, fill materials, building supplies and use of energy powered construction equipment would be necessary. Once completed, a commercial or residential building would require an ongoing commitment of water, electricity and gas supplies, sewage treatment and solid waste disposal capacity.

Any proposed buildings would be constructed in accordance with the New York State Energy Conservation Code that provides standards and requirements for the incorporation of energy conservation techniques, materials and equipment into building design and construction. Sound construction practices limiting the commitment of energy resources are expected to be maintained.

6 Growth Inducing Aspects

One of the objectives of the Southwest Area Land Use plan is to encourage growth within the City. As reported in the Economic Study (Appendix J), the overall economic trends for Tompkins County are positive yet the City is expected to face challenges in capturing its share of this regional growth. The Plan, together with design guidelines and this DGEIS, provide the framework for new development.

New growth would reflect market demand and may include additional residential units and/or commercial uses as depicted by the six land use alternatives. For example, if market forces point toward the development of multi-family residential units as described in Alternative 2, the potential for population growth in the study area would increase, thereby adding households to a declining City population. New households would increase the demand for community services such as schools, public safety and utilities.

Commercial development, on the other hand, presents opportunities for job creation, enhancement of retail options and expansion of the City's tax base. It is expected that Plan adoption and subsequent development may aid in stabilization of the City's sales and property tax bases.