by the Planning Commission. The law would also ban formula businesses entirely from the Hayes-Gough neighborhood, the district Gonzalez represents.

"Formula" businesses are legally defined as those that have standardized characteristics and methods of operation similar to other establishments. Many chains and franchise outlets qualify.

As we reported in the last issue of this Bulletin, an earlier measure sponsored by Gonzalez applied only to drugstores and coffee shops. After constituents complained that it did not go far enough, he returned with the current proposal covering all formula businesses.

"The increasing number of formula/chain stores has a homogenizing effect on our neighborhoods and makes it more difficult for local and independent businesses to have a foothold in the city," Gonzalez said, noting that his proposal furthers one of the eight priority policies in the city's master plan. The policy resolves that "existing neighborhood-serving retail uses be preserved and enhanced and future opportunities for resident employment in and ownership of such businesses enhanced."

The measure is now before a subcommittee. It may be several months before a vote by the Board of Supervisors. Several smaller towns around the country have banned or restricted formula businesses. San Francisco would be the largest city to date to regulate them.

Meanwhile, in November, San Francisco voters will consider a measure to strengthen the city's Small Business Commission. The current commission is appointed by the mayor and has little real authority. The referendum proposal calls for writing the commission into the city's charter, making it an independent body, with its own budget, increased clout, and authority over the city's Small Business office. The referendum is backed by San Francisco Small Business Advocates and the Small Business Network.

-- Examples of formula business ordinances: http://www.newrules.org/retail/formula.html
-- San Francisco Small Business Advocates: http://www.smallbusinessadvocates.com
-- Small Business Network: http://www.sfsbn.org
-- New study on the economic value of the San Francisco's small businesses: http://www.cal-insure.com

SANTA MONICA LIMITS STOREFRONT SIZE ON PROMENADE

In an effort to prevent further consolidation of small storefronts into large chain outlets along the Third Street Promenade, the city of Santa Monica has adopted an ordinance that limits stores to no more than 50 linear feet of street frontage. The City Council has also directed city staff to compile data on the number of formula businesses in the district and draft options for limiting their proliferation.

The Third Street Promenade is a vibrant, three block long, pedestrian corridor of stores, restaurants, and theaters. The area was blocked to car traffic in the 1960s, but failed to attract

shoppers and struggled with vacancies and decline for two decades. In the late 1980s, the district began to turn around. A diverse mix of small, one-of-a-kind stores started drawing crowds.

The Promenade's success caught the attention of corporate chains. They began opening outlets on the street in the 1990s, driving up rents and squeezing many local stores out. Barnes & Noble, Borders, Banana Republic, Pottery Barn, Restoration Hardware, Abercrombie & Fitch, Old Navy, and J Crew are among the retailers currently on the Promenade.

To accommodate their larger formats, the chains often combined several smaller storefronts into one large space, which has reduced the number and diversity of shops along the street. The 50-foot limit is designed to prevent further consolidation of storefronts.

-- Storefront Size Restriction Ordinance:
http://www.santa-monica.org/cityclerk/council/agendas/2003/20030909/s2003090907-E-1.htm

V. ALLIANCES & COOPERATIVES

MINNESOTA TOWN'S AD CAMPAIGN TAKES AIM AT CHAINS

"Secede from Starbucks Nation" is the tagline of a new advertising campaign by the small town of Excelsior, Minnesota. The tongue-and-cheek ads take jabs at chain stores and promote Excelsior as a place where one-of-a-kind, locally owned businesses are embraced.

The ads consist of hand-written letters to Starbucks, the Hard Rock Café, and Home Depot. The one to Home Depot reads, "Thank you for your interest in our fine lakefront town. . . But with all due respect, we think we have it covered when it comes to home improvement. You see, we already have a few hardware stores of our own and even our own paint shop."

It goes on, "We know you have shelves stocked up to the ceiling. . . But, no offence, you've never seen where we live. Chris at True Value has and knows exactly what we need."

Excelsior sits on the shores of Lake Minnetonka about 20 miles west of Minneapolis. A lakeside resort in the 19th century, the community has maintained a lively downtown of locally owned businesses, including clothing stores, a florist, printer, barber, ice cream parlor, and music shop.

"The only brand-name you'll recognize is Pizza Hut," said Linda Murrell, director of the Excelsior Area Chamber of Commerce, which sponsored the ads with the goal of drawing people tired of cookie-cutter chains to downtown Excelsior.

The ads caused quite a stir when they first appeared in a regional magazine in June. Murrell heard complaints from several of the Chamber's members, including a few independent retailers who said the ads would deter new businesses and make the town appear arrogant.

But the complaints disappeared once the ads started attracting shoppers and media attention. Stories have aired on several local radio and television stations. Both the Minneapolis Star

Tribune and the Minneapolis Business Journal gave Excelsior front page coverage. "I've never seen as much return on so little investment," said Chris Birt of Andrews/Birt, the firm that created the ads. The Chamber has spent a total of $7,000.

Activity in downtown Excelsior has increased noticeably. Several entrepreneurs are now interested in locating new businesses in Excelsior. "They all say, 'What a great ad campaign,'" Murrell noted. "I have said many times that advertising Excelsior as 'a charming little town on the lake with nice merchants and cute gift stores' doesn't grab anyone's attention."

-- To view the ads, follow the links under "Ads Promoting Independent Businesses" in the Resources section below.

VI. RESOURCES

ADS PROMOTING INDEPENDENT BUSINESSES

The New Rules Project has begun to assemble an on-line "slide show" of advertisements, bumper stickers, and other items that encourage people to support locally owned businesses. So far, our collection includes 19 examples from around the country. We hope readers will send us more (contact Stacy Mitchell at smitchell@ilsr.org).

-- To view the slide show: http://www.newrules.org/retail/slides/index.html
-- Or view images one by one: http://www.newrules.org/retail/slides/indexolder.html

REPORT TRACKS WEAKENING OF STATE TIF LAWS

A new report from Good Jobs First reveals that many states have weakened the criteria for establishing tax increment financing (TIF) districts. TIF was originally intended to spur development in poor neighborhoods, but many states have broadened the criteria, allowing subsidies to flow to more affluent, suburban locations. The number of TIF districts has since mushroomed. Many include big box retail. The report also highlights a handful of states that have instead tightened their TIF laws and channeled subsidies to impoverished areas.

-- "Straying from Good Intentions" http://www.goodjobsfirst.org/straying.pdf

INDEPENDENT BUSINESSES, UNITE!

In Business magazine article on independent business alliances by Stacy Mitchell.
http://www.ilsr.org/columns/2003/inbusiness.pdf

IN WAL-MART'S AMERICA

Washington Post op-ed on how Wal-Mart's destroying the middle class by Harold Meyerson.
http://www.commondreams.org/views03/0827-06.htm

UPCOMING EVENTS

October 3, Denver, Colorado
Stacy Mitchell of the Institute for Local Self-Reliance and Valecia Crisafulli of the National Main Street Center will be presenting a session on "Locally Owned Retail: A Revival" at the National Trust for Historic Preservation annual conference from 1:30 to 3:00 p.m. The session will examine the true costs of chain stores and will outline strategies for revitalizing downtowns and expanding locally owned retail.
-- http://www.nthpconference.org

October 8, St. Croix Falls, Wisconsin
Stacy Mitchell of the Institute for Local Self-Reliance will be talking about the impact of big box stores on Main Street and what communities can do to reverse the trends at a public forum organized by the Polk County Green Party. The event will be held at 7 p.m. at the Polk County Information Center (intersection of US Hwys. 8 & 35) in St. Croix Falls.

October 11, Oakland, California
Jennifer Rockne, director of the American Independent Business Alliance, will be presenting a session on "Localizing Economics and Community Investment" at the Empowering Democracy Conference:
-- http://empoweringdemocracy.org

October 14, Grand Rapids, Michigan
Judy Wicks, owner of the White Dog Cafe in Philadelphia and co-chair of the Business Alliance for Local Living Economies, will talk about re-building our local economies.
-- http://www.livingeconomies.org/balle/calendar/eventDetail.cfm?eventId=104

October 14, Flagstaff, Arizona
Jeff Milchen, co-founder of the American Independent Business Alliance, will be presenting "Supporting Positive Alternatives (Locally-Owned Businesses) with an Independent Business Alliance" at a public forum.
-- Contact Sandra Lubarsky at Sandra.Lubarsky@ nau.edu

October 30th, Montpelier, Vermont
Stacy Mitchell of the Institute for Local Self-Reliance and Paul Bruhn of the Preservation Trust of Vermont will present a new report on how to strengthen locally owned retail in Vermont at the annual Vermont Downtown Conference. The report outlines 50 innovative planning policies and revitalization strategies gathered from around the country.
-- http://www.dhca.state.vt.us/DHP/programs/downtown.html

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from the Institute for Local Self-Reliance, 1313 5th Street SE, Minneapolis MN 55414 - Tel: 612-379-3815 - Fax: 612-379-3920 - Web: http://www.ilsr.org - Email: smitchell@ilsr.org.

EXHIBIT B

Economic Impact Analysis: A Case Study

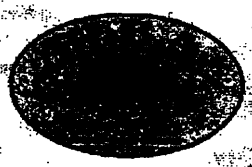
Local Merchants vs. Chain Retailers

COMPLETE REPORT

Prepared for

liveablecity

&



by

CIVIC ECONOMICS

CREATIVITY · OPPORTUNITY · PROSPERITY

December 2002

ECONOMIC IMPACT ANALYSIS
Local Merchants vs. Chain Retailers

INTRODUCTION

Civic Economics is pleased to present Liveable City with this Economic Impact Analysis assessing the economic impact of local merchants relative to a chain merchant carrying comparable lines of goods. Sixth and Lamar, specifically BookPeople, Waterloo Records, and Borders Books & Music, provide a case study.

The National Context

American communities from coast to coast have wrestled with the implications of national chain retail. In many small communities, the issue comes to a head with the imminent arrival of a large discount store, and manifests itself in an anti-Wal-Mart campaign. In others, the desperate quest for sales tax revenues places public officials squarely on the side of national merchants. Few would argue that chain stores have no place in a large community such as Austin. In many cases these stores expand consumer choice and offer good consumer value.

Despite national interest, however, CivEc has identified a near absence of objective, fact-based analysis of the phenomenon. Proponents and opponents alike present broad arguments based on emotional or philosophical pleas, for "mom and pop" shops and local character on one side and for free markets and consumer choice on the other. This report is designed to enhance the discussion by providing a credible and quantifiable analysis.

The Local Context

The area of Sixth Street and Lamar Boulevard in central Austin provides an outstanding opportunity to study the dynamics of retail competition. The following analyses are put forth as a case study of the interaction among co-locating chain and local merchants in similar lines of goods.

There can be no doubt that development of the properties in question is in the public interest. The corner of Sixth and Lamar is destined to become a retail, residential, and office hub for the region. Austin policymakers have wisely promoted this outcome. However, few seriously contend that the composition of this development is unimportant. Austin's smart growth, great streets, and downtown development policies are carefully crafted to promote the health of the city by providing developers with incentives for preferred behaviors.

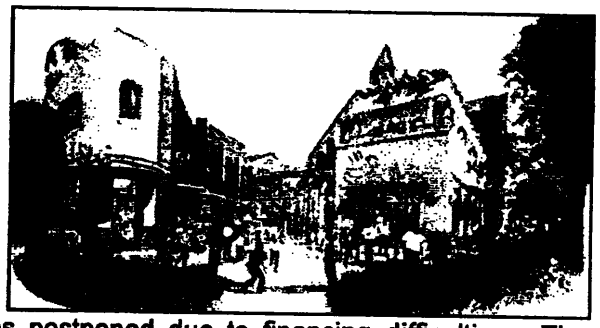
This analysis demonstrates a clear failure of public policy to steer desirable development at the site in question. As presently configured, new development at the corner will yield a net loss to the local economy. Moreover, previous decisions have placed the city in the position of subsidizing such an outcome.

Schlosser Development Corp. presently controls the two blocks between Fifth and Sixth to the east of Lamar as well as the previously developed block to the south, containing Office Max, Starbucks, and an AT&T Phone Store. Should the development proceed as

presently structured, Schlosser will additionally take on leasing responsibilities at the present Whole Foods and BookPeople complex.

Under the present proposal, the offices and flagship store of Whole Foods Market will occupy the prime block of the Schlosser site. Whole Foods is a genuine Austin success story, growing in 20 years from a single Lamar store to a national chain with 137 outlets and growing. Whole Foods became a publicly traded company in 1992 (Nasdaq: WFM). Much of the company's expansion has come through acquisition of 12 local chains around the nation.

Schlosser proposes to anchor the eastern block with a Borders Books & Music store. Borders, like Whole Foods, is a hometown success story in a college town. From the first store in Ann Arbor, Borders has grown into the second largest national retailer of books and music. After a brief stint as a subsidiary of K-Mart, Borders was spun out in 1997 and now trades as BGI, the holding company for Borders and Waldenbooks.



As originally presented to the City, the Schlosser development on the site was to be an "urban village," albeit one with a Target store for an anchor. This proposal (at left), featuring the design work of internationally recognized Jerde Partnership, was approved for substantial public incentives. Unfortunately, after clearing and grading the site and closing a public street, the project was postponed due to financing difficulties. The project was resurrected in the summer of 2002 in the present configuration.

According to published sources, the combined Schlosser properties have been granted incentives with a total value of over $2.1 Million. These include fee waivers, water and wastewater infrastructure reimbursements, drainage improvements, and a temporary use of right-of-way fee waiver. The projects have thus far received approximately $710,000 of these incentives. Additionally, the developers have entered into an agreement with Austin Energy for the provision of a chilled water facility valued at approximately $3.5 Million.

EXECUTIVE SUMMARY

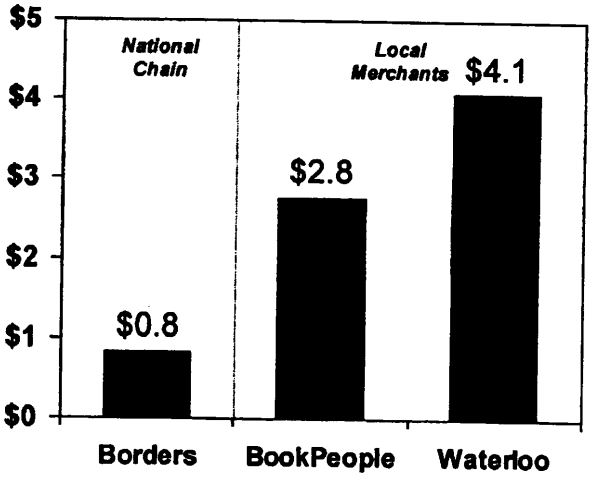
Civic Economics (CivEc) is pleased to present this Economic Impact Analysis assessing the economic activity generated by local merchants relative to a chain merchant carrying comparable lines of goods. Economic impact, for the purposes of this case study, is based on locally focused expenditures of the merchants, including such items as labor, profits, goods, and services.

PRINCIPAL FINDINGS: THREE ESSENTIAL FACTS

FACT: Local merchants generate substantially greater economic impact than chain retailers.

CivEc initially compared the local economic impact of three freestanding stores, a typical Borders, and the existing and known quantities of BookPeople and Waterloo.

Annual Economic Impact per Store
(millions in 2002)



Three distinctions account for the dramatic difference seen in the chart at right:

1. Local merchants spend a much larger portion of total revenue on local labor to run the enterprise and sell the merchandise.
2. Local merchants keep their modest profits in the local economy.
3. Local merchants provide strong support for local artists and authors, creating further local economic impact.

FACT: Development of urban sites with directly competitive chain merchants will reduce the overall vigor of the local economy.

Development of a Borders store at Sixth and Lamar will reduce the vigor of the Austin economy. In this analysis, CivEc reviewed three scenarios to account for the range of impacts possible. In all three, Borders triggers a decline in local economic activity despite increasing total sales of books and music at the corner.

Competitive Effects:
Borders Impact over Five Years

Total book and music sales **increase**

Economic returns **decrease**

ECONOMIC IMPACT ANALYSIS
Local Merchants vs. Chain Retailers

CivEc puts forth two alternative outcomes in which the neighborhood and the Austin economy will be enhanced:

1. New merchants bring a new line of goods to the market, attracting additional consumer traffic to the area to the benefit of neighboring merchants. For example, former plans called for a cinema at the site. This would have offered a product previously unavailable at Sixth and Lamar, drawing additional prospective customers for all neighboring merchants.

2. New merchants bring a complementary line of goods to the market, leading to increased browsing among merchants with similar but unique lines of goods. For example, there exists in the neighborhood a cluster of antiques and home goods shops. Shoppers for these goods are induced to visit several merchants, as unique yet related items are offered in each shop.

As presently configured, the City of Austin is asked to subsidize a development that actually does damage to the local economy.

FACT: Modest changes in consumer spending habits can generate substantial local economic impact.

For every $100 in consumer spending at Borders, the total local economic impact is only $13. The same amount spent with a local merchant yields more than three times the local economic impact.

If each household in Travis County simply redirected just $100 of planned holiday spending from chain stores to locally owned merchants, the local economic impact would reach approximately $10 Million.



ECONOMIC IMPACT ANALYSIS: LOCAL MERCHANTS vs. CHAIN RETAILERS

This report is divided into three sections, which present similar data in different formats for different audiences.

SECTION I: COMPARATIVE ECONOMIC IMPACT ANALYSIS presents a baseline assessment of the economic impacts of three different, freestanding stores: BookPeople, Waterloo, and a typical Borders. It provides much of the underlying data for subsequent analysis.

SECTION II: COMPETITIVE EFFECTS ANALYSIS is aimed squarely at policymakers. It provides a five-year forecast of the likely effect of competition at Sixth and Lamar.

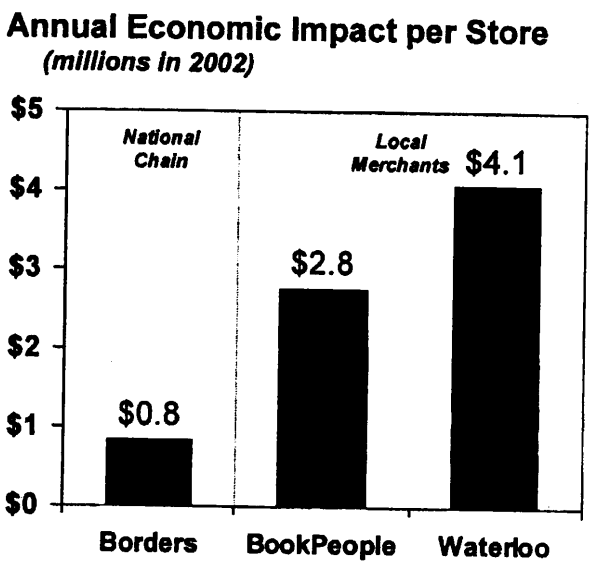
SECTION III: PROPORTIONATE ECONOMIC IMPACT ANALYSIS is aimed squarely at consumers. It provides shoppers with an understanding of the implications of our purchasing decisions.

Civic Economics has withheld a small amount of the underlying data in order to protect the privacy and business practices of the local merchants in question. Questions regarding methodology and findings should be directed to:

Dan Houston, Partner
Civic Economics
dhouston@CivicEconomics.com

SECTION I: COMPARATIVE ECONOMIC IMPACT ANALYSIS

Locally owned and operated merchants generally have greater impacts on local economies than outlets of national change due to three primary classes of expenditure.



First, spending on **local labor** typically comprises a greater share of operating costs for a locally owned establishment than an outlet of a national chain. While the latter is able to consolidate the vast majority of its administrative functions, such as bookkeeping and advertising, at its national headquarters, an independently owned store carries out those functions in the community. Additionally, "economies of scale" and carefully engineered store layouts may allow national chains to employ fewer sales staff than locally based stores.

Next, large national chains purchase fewer **goods and services** in the markets they serve. Their products, advertising, and supplies are usually procured at the national level. By contrast, local stores may purchase a substantial portion of these goods and services from other local firms, keeping that money in the community. Additionally, local bookstores and record stores are often the sole outlets for retail sales of books and recordings by local authors and artists. Particularly for authors and artists with self-published works, such as local bands selling music on consignment, the bulk of sales receipts remain local. National chain stores stock few such items.

Finally, a larger portion of **profits** earned by owners of local stores remains in the local economy. Once a purchase is made at a nationally owned store, the profits from that sale go directly to the headquarters outside the region, perhaps to be distributed to stockholders worldwide. The owners of local establishments, by contrast, are members of the local community, residing in nearby neighborhoods and spending their earnings on goods and services locally or supporting local organizations.

Chart 1 presents the first standard dataset of an economic impact assessment, the combined direct and indirect economic impacts of each store. In this analysis, CivEc reviewed the local employment and spending patterns of each merchant, using actual data from BookPeople and Waterloo, and a typical Borders store, all in 2002. Details of the underlying data, assumptions, and methodology have been withheld to protect the privacy and business practices of the local merchants.

For the purposes of this report, **direct impacts** are identified as all local expenditures by the store. For example, wages and benefits paid to employees remain local, as does local advertising spending, purchases from local suppliers, and, in the case of the local merchants, profit. By including off-site expenditures as part of the direct impact, this analysis is able to incorporate the marked difference between these purchases made by local establishments and national franchises. In a simple economic impact analysis, off-site expenditures are viewed as indirect impacts, to be estimated by the application of multipliers. However, in this case, such a treatment would yield inaccurate results by estimating that local merchants and chain outlets purchase equal shares of goods and services locally.

Calculation of **indirect impacts** seeks to quantify the further effects of direct impact funds as they circulate in the local economy. Indirect impacts are calculated using **multipliers**, which estimate the degree of circulation expected. The cost of goods for each store, which includes wholesale purchases of merchandise and the space in which to sell it, are not included in the calculations. These indirect impacts also include **induced effects**, accounting for increased household spending brought about by additional local economic activity.

CivEc here utilized conservative, industry standard multipliers, calculated by a nationally respected firm using a sophisticated input-output model of the Austin economy. To protect the privacy and business practices, the precise values of those multipliers cannot be provided in the published version of this report.

Our analysis reveals that the typical Borders store generates total local economic impact of just over $820,000.

By contrast, BookPeople generates total a local economic impact of $2.8 Million.

Similarly, Waterloo generates local economic impact of $4.1 Million.

It must be noted that this is a net economic impact and not a fiscal analysis. This local impact does not seek to determine the amount of revenue each will deliver to the local governmental units involved. Such tax revenue will be similar whether new retailers at the site are a competitive threat to other independent businesses nearby or not.

SECTION II: COMPETITIVE EFFECTS ANALYSIS

Underlying Assumptions

The analysis described above calculates the economic impact of the three stores in the present year. However, to address the situation at Sixth and Lamar requires consideration of the effect of direct competition at the corner. CivEc has, therefore, formulated a set of assumptions about the performance of these stores in the future and in competition. For the purposes of this study, 2004 has been treated as year one of competition.

Competitive Effects:

Borders introduces no new products to the market, either at the corner or in Austin.

Approximately 50% of revenue at a new Borders will be diverted from BookPeople and Waterloo.

Assumption 1: According to recent annual reports of Borders Group Inc., the average Borders nationwide will achieve sales of approximately $6.5 Million in 2002. However, given the expected intensity of competition in comparable merchandise at Sixth and Lamar, we do not believe that this Borders store will perform as well. We have thus assumed a Borders store with first year revenues of $4.7 Million. It should be noted that Borders Stores closed only one outlet in 2001, indicating a willingness to maintain under performing stores for sustained periods. Additionally, our analysis demonstrates that should Borders perform substantially better than projected here, local merchants BookPeople and Waterloo would face extreme challenges to remaining in business.

Assumption 2: The calculation begins with projected revenues for BookPeople and Waterloo, provided by the merchants themselves. In the absence of a Borders at the corner, both project modest annual increases over the coming years. To validate these assumptions, CivEc studied recent retail sales trends (books, music, and overall retail sales) for a large area of central Austin. Books, music, and general retail all sustained strong gains over the last ten years, with a modest decline in 2001. Based upon 2002 sales figures for BookPeople and Waterloo, continuation of modest annual gains is a reasonable assumption.

Assumption 3: CivEc again studied retail sales trends for the region to estimate the likely effect of competition among the stores. Given the similar product mix and nearly identical pricing of those goods, we assumed that approximately 50% of Borders sales at this location would represent sales diverted from BookPeople and Waterloo. This assumption is supported by historical retail data showing consistent but modest increases in book and music sales locally. Given Borders' emphasis on books and the duplication of inventory at BookPeople, we assumed that diverted sales would weigh more heavily on BookPeople than on Waterloo. As to the other 50% of sales, that revenue is likely to be drawn primarily from other merchants throughout the metropolitan area, though a new Borders location may be expected to induce a very small amount of new book and music spending in the region.

Assumption 4: Finally, CivEc formulated three likely outcomes in succeeding years. In the first, labeled the Basic Borders, the Borders store is projected to gain revenues at an annual rate of 2%, in line with both the industry overall and with the chain's same-store sales in recent years. In the second, labeled the Weak Borders case, Borders is projected to lose revenues at an annual rate of 3% as local competitors retake lost market share. In the third, labeled the Strong Borders case, Borders is projected to consolidate its position and gain revenues at an annual rate of 7%. For the local merchants, we also include a No Borders scenario, using the projected revenues described in Assumption 2.

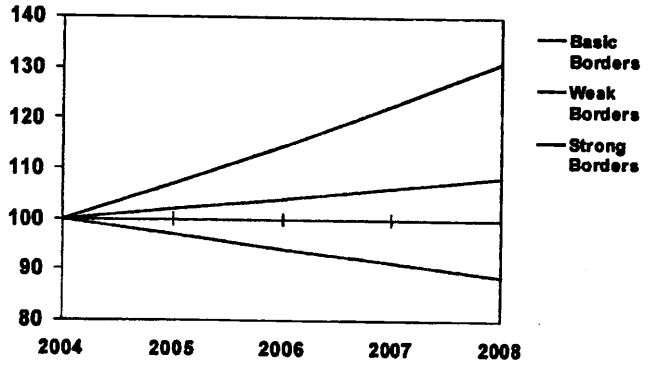
All charts in the remainder of Section 1 incorporate variations on these assumptions and scenarios. As with other analyses in this report, details of revenue forecasts are withheld to protect the privacy and business practices of BookPeople and Waterloo.

Competitive Effects Scenarios

The following charts illustrate the range of competitive effects for Borders, BookPeople, and Waterloo.

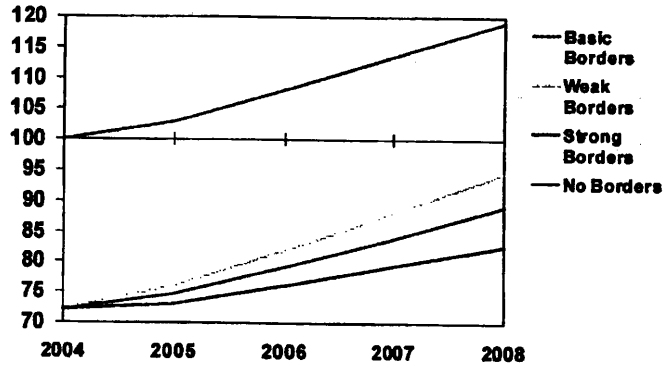
Borders Sales Forecast, '04 to '08

(Indexed: 2004 Sales = 100)



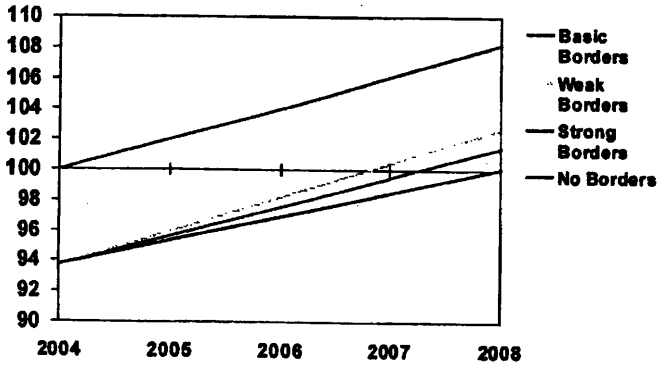
BookPeople Sales Forecast, '04 to '08

(Indexed: 2004 Sales = 100)



Waterloo Sales Forecast, '04 to '08

(Indexed: 2004 Sales = 100)



Borders sales are forecast to begin at $4.7 Million, and rise to nearly $5.1 Million in the Base Case, with high and low projections of $6.1 Million and $4.1 Million by 2008.

In these projections, sales diverted from BookPeople and Waterloo will be expected to total between $11 Million and $14 Million over the course of five years.

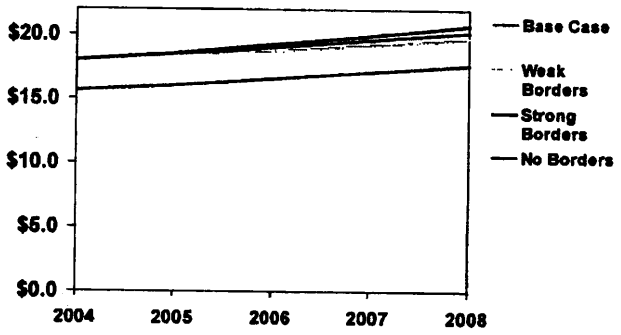
At first glance, these projections might appear extreme. However, the present situation is particularly clear. This study involves merchants selling very similar lines of goods at nearly identical prices so the competition will be intense.

We have no doubt that the first year of competition at the corner will produce profound changes in revenue for BookPeople and Waterloo. Moving forward, similarly strong effects will be felt as competition settles into a pattern.

Economic Impact of Competition

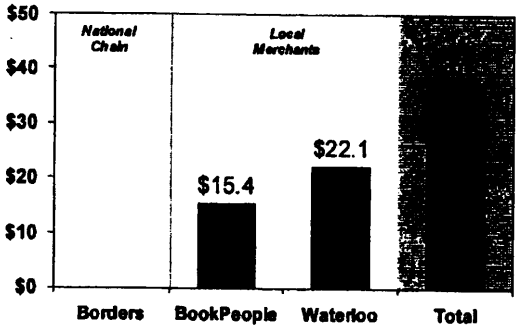
At first glance, citizens and policymakers might view the scenarios above as the result of healthy competition, enhancing consumer choice and value. Indeed, in such a dynamic marketplace as Austin, such shifts are taking place every day in every line of merchandise. In all of the scenarios, total sales of books and music (and therefore total sales tax revenue) at the intersection will increase.

Total Sales Forecast, Books & Music, '04 to '08
(millions)

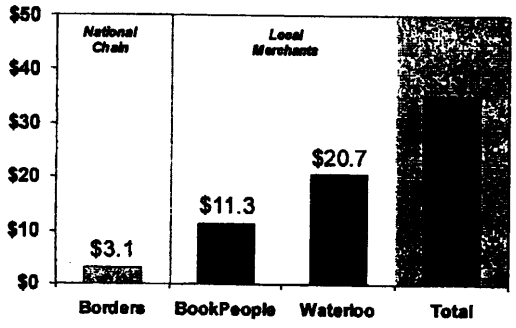


However, the total return to the community entails activity beyond retail sales and sales tax collections at a given location. The economic health of the city is impacted as well by wages paid to local residents, by materials and supplies purchased locally, and by the reinvestment of profits in the business and in the community. These factors are the building blocks of economic impact.

Cumulative Gross Impact without Borders, '04 thru '08
(millions)



Cumulative Gross Impact with Base Case Borders, '04 thru '08
(millions)



CivEc undertook to analyze the economic impact on the local economy of each of these scenarios. In making these calculations, we assumed that all merchants would increase or reduce expenses in proportion to changed revenue. In the Strong Borders scenario, for example, Waterloo will be expected to experience a decline in revenue of 7%. Therefore, the analysis incorporates a 7% reduction in expenditures for labor, materials, and services purchased locally.

In every scenario above, despite additional total sales, **the total economic activity generated by these merchants is projected to decline after the opening of a Borders and Sixth and Lamar.**

This counterintuitive outcome occurs because every dollar drawn away from a locally owned merchant by a chain store results in a net loss to the local economy. Activity generated by new sales does not replace the activity lost in that diversion of sales.

Policy Implications

Policymakers often feel compelled to draw chain retailers into a jurisdiction as a means of increasing sales tax collections, an apparently painless way of maintaining necessary government services without resorting to tax increases. If we look only at the corner of Sixth and Lamar, sales tax collections will indeed increase if a Borders opens. That is true, however, regardless of what opens on that site.

In the case at hand, increasing sales tax revenues by siting a chain store directly across from local merchants selling similar goods at similar prices actually results in reduced economic activity.

Alternative Outcomes:

- New merchants bring a new line of goods to the market
- New merchants bring a complementary line of goods to the market
- New merchants contribute to local economic vitality

This analysis clearly demonstrates that public goals will be better served by promoting alternative retail options at the corner.

Two scenarios present more desirable outcomes:

1. New merchants bring a new line of goods to the market, attracting additional consumer traffic to the area to the benefit of neighboring merchants. For example, former plans called for a cinema at the site. This would have offered a product previously unavailable at Sixth and Lamar, drawing additional prospective customers for all neighboring merchants.

2. New merchants bring a complementary line of goods to the market, leading to increased browsing among merchants with similar but unique lines of goods. For example, there exists in the neighborhood a cluster of antiques and home goods shops. Shoppers for these goods are induced to visit several merchants, as unique yet related items are offered in each shop.

A policy preference for local merchants will produce even greater economic vitality.

Current smart growth policy and downtown development programs have created the in this situation the unfortunate side effect of offering financial and development assistance to a project that will actually sap economic vitality from the urban core.

SECTION III: PROPORTIONATE ECONOMIC IMPACT

The economic impact analysis above provides compelling evidence of the public benefits of local merchants relative to chain retailers. How might consumers use this information to modify spending habits? The following analysis identifies the relative value provided to consumers and the economic impact of their spending.

Value to Consumers

CivEc, with BookPeople and Waterloo staff, prepared shopping lists for comparison. These selections were not made in a scientific manner, merchants were simply instructed to identify five titles in each of five categories of books or music. They did not engage in comparison shopping before making these lists. CivEc then undertook to compare the availability and cost of these items at each store.

Value to Consumers:

Prices for books and music are nearly equal at Borders, BookPeople, and Waterloo.

30% of comparison shopping selections were not in stock at Borders.

In the case of books, it is clear that Borders is not a "discount store." In this atypical industry, prices are printed on the product at the factory, and both BookPeople and Borders use those prices in nearly every case. Every item on the shopping list was priced the same at both merchants. Moreover, approximately 30% of these items were out of stock at the Borders store used for comparison.

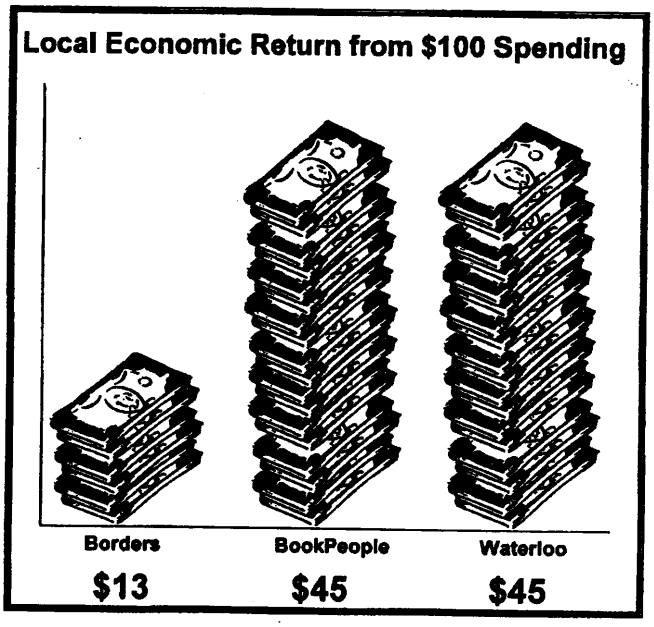
In the case of recorded music, comparison shopping proves more difficult. Austin's Waterloo Records is among the top performing independent record stores in the nation, and stocks an extraordinary variety of titles, from the latest popular music to the most obscure local bands. For those titles on the shopping list that were in stock in both places, aggregated prices were essentially equal, though price advantages among titles varied considerably. In an independent comparison-shopping exercise, the Austin American-Statesman recently found a savings of 8.5% at Waterloo versus Borders. ("At What Price Music," Austin American-Statesman, December 5, 2002).

Consumers seeking the most popular titles and artists receive equal value at each of the three merchants studied. However, the consumer whose tastes run to more esoteric books or local music is far better served at BookPeople and Waterloo. Indeed, these findings emphasize the homogenizing effect of chain retailers. The consumer who shops only at Borders may remain unaware of many artists and authors outside the mainstream of the publishing and recording industries.

Local Impact

Having established comparable value and better selection, CivEc then calculated the local economic impact of $100 in consumer spending at each of the three stores.

When the consumer spends $100 at Borders, approximately $9 remains in Austin, primarily in the form of employee salaries. The remainder is transferred out of the city almost immediately, in the form of wholesale expenses, administrative costs incurred elsewhere, and profits. Applying industry standard multipliers to calculate total economic impacts, this $100 spent yields a total of $13 in local economic impact.



By contrast, consider that same $100 spent at BookPeople or Waterloo. There, as much as $30 is directly injected into the local economy. Again, much of this is kept local in the form of employee salaries, but with local merchants administrative expenses and profits are also directly placed into the Austin economy. Applying the same multipliers to calculate total economic impacts, this $100 spent yields a total of over $45 in local economic impact.

Consider this: If each household in Travis County redirected just $100 in holiday spending, the local economic impact of that simple act would reach approximately $10 Million.

ABOUT THE PROJECT PARTICIPANTS

LiveableCity Austin is an inclusive network of individuals working together to create a community consensus to promote policies that address the long term social, environmental and economic needs of the people of Austin.

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CIVIC ECONOMICS
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Civic Economics (CivEc) is an economic analysis and strategic planning consultancy with offices in Austin and Chicago.

BookPeople and Waterloo Records and Video provided additional funding and research support for this study, with support from the Austin Independent Business Alliance.

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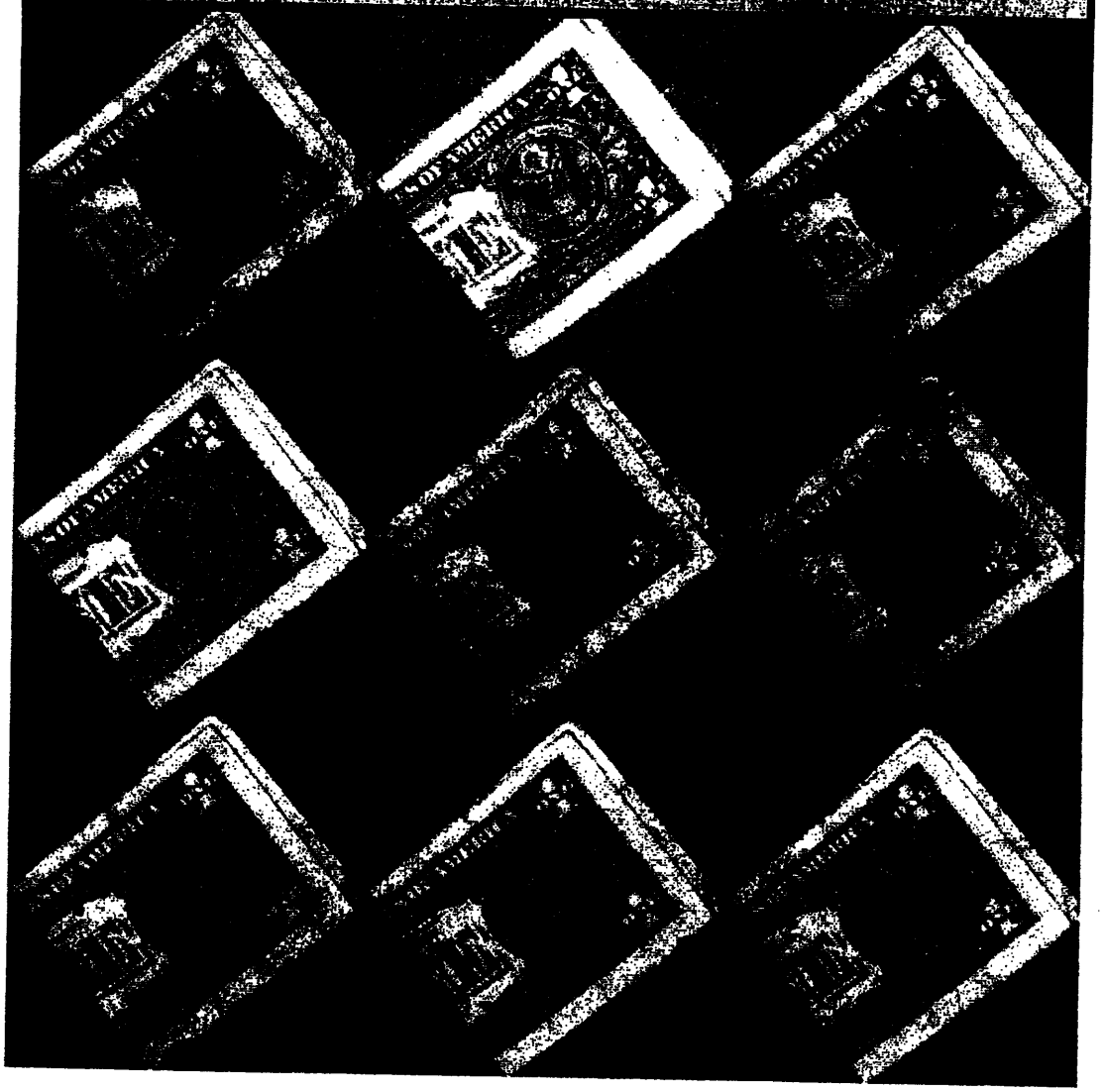
EXHIBIT C

The ANDERSONVILLE STUDY of [illegible]

October 2004



CIVIC ECONOMICS

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HIGHLIGHTS OF THE ANDERSONVILLE STUDY

In a study comparing the economic impact of ten Andersonville businesses and their chain competitors, it was found that:

Locally-owned businesses generate a substantial Local Premium in enhanced economic impact.

- For every $100 in consumer spending with a local firm, $68 remains in the Chicago economy.
- For every $100 in consumer spending with a chain firm, $43 remains in the Chicago economy.
- For every square foot occupied by a local firm, local economic impact is $179.
- For every square foot occupied by a chain firm, local economic impact is $105.

Consumers surveyed on the streets of Andersonville strongly prefer the neighborhood over agglomerations of common chain stores.

- Over 70% prefer to patronize locally-owned businesses.
- Over 80% prefer traditional urban business districts.
- Over 10% of respondents reside outside the City of Chicago.

The study points to clear policy implications.

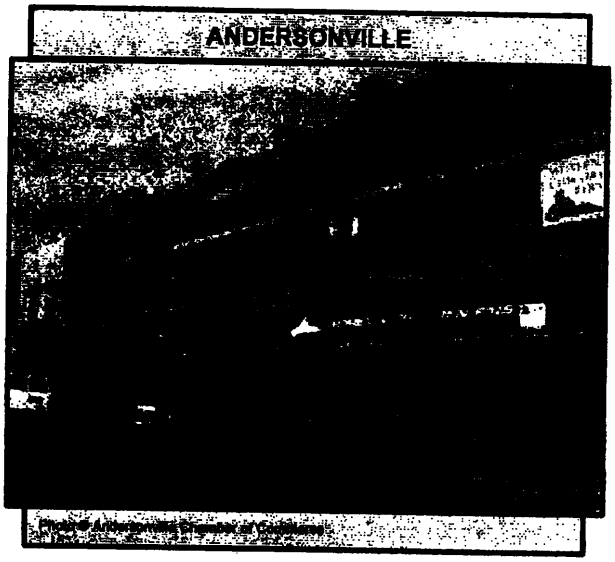
- Local merchants generate substantially greater economic impact than chain firms.
- Replacement of local businesses with chains will reduce the overall vigor of the local economy.
- Changes in consumer spending habits can generate substantial local economic impact.
- Great care must be taken to ensure that public policy decisions do not inadvertently disadvantage locally owned businesses. Indeed, it may be in the best interests of communities to institute policies that directly protect them.

www.AndersonvilleStudy.com

EXECUTIVE SUMMARY

Abstract:

The Andersonville Development Corporation, with the support of The Andersonville Chamber of Commerce and funding by Andersonville Special Service Area #22, retained Civic Economics to evaluate the economic impact of the neighborhood's locally-owned businesses and compare that with the impact of competitive chains. With the active participation of ten local firms, economic impacts were determined for each. Economic impacts for ten chains were then determined. To account for differences in revenue and size, those impacts were adjusted to two measures: impact per $100 revenue and impact per square foot. Because the locally-owned businesses and national chains were found to generate comparable revenue per square foot of retail space, the local firms were found to generate 70 percent greater local economic impact than chains per square foot, or 58 percent by revenue.



Andersonville is a neighborhood on Chicago's north side. Its primary thoroughfare, Clark Street, bisects the neighborhood and serves as its commercial center. The commercial district is distinctive for its quaint facades and greenery, its history as a Swedish settlement, its current diversity, and the notable dearth of chain outlets among its countless shops, restaurants, and service providers. However, national chains have expressed interest in the community as disposable income continues to increase. These national chains are able to pay above present market value on their leases, which has begun driving commercial rental rates up and longstanding local businesses out.

The Andersonville Development Corporation (ADC), the Andersonville Chamber of Commerce (ACC) and Andersonville Special Service Area provide economic and market development services to the area. Civic Economics is an economic analysis and strategic planning consultancy with offices in Austin and, coincidentally, Andersonville.

Civic Economics previously conducted a widely cited study in Austin, Texas, assessing the economic impact of a publicly subsidized Borders Books & Music store seeking to locate across the street from locally-owned Book People and Waterloo Records. In those unique circumstances, it was demonstrated that the

local merchants generated three times as much local economic activity as the chain store, adjusted for revenue. That study, known as the Liveable City Study, has been replicated in two very different circumstances with similar findings: Maine's Mid-Coast region and Toledo, Ohio.

ADC retained Civic Economics to build upon that research, studying the role of Andersonville's diverse business community in the Chicago economy. ADC recruited ten local businesses to participate fully in the study, opening their books to the firm to facilitate a complete economic impact analysis of each. Civic Economics then prepared economic impact analyses of ten chain competitors selected in consultation with ADC and with consideration given to data availability. We adjusted those impacts to account for variations in revenue and square footage, and, to further explore the meaning of the data, businesses were categorized into three segments: restaurants, retailers, and service providers.

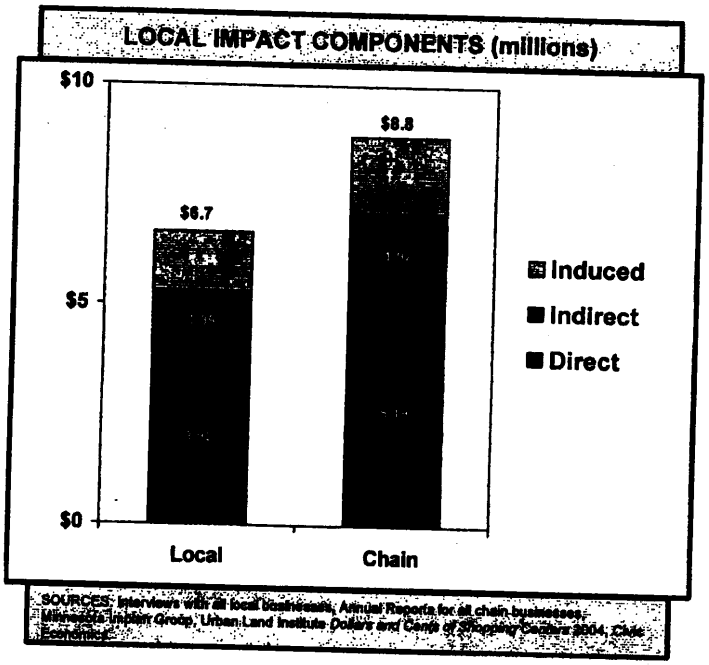
ADC also conducted a Customer Preference Survey of 512 randomly selected shoppers within the neighborhood during the month of May 2004. While this was an unscientific survey it provided interesting background information about where patrons are drawn from and why they choose to shop in Andersonville. Just under 40 percent of survey respondents came from outside the two main zip codes for the Andersonville area, and ten percent were from outside the City of Chicago. These visitors bring money into the district and into the city.

When asked to express a preference on the type of business shoppers patronize, over 70 percent preferred locally-owned businesses while less than three percent preferred chain businesses. Additionally, an overwhelming 80 percent of respondents identified Andersonville's traditional neighborhood district, with locally-owned independent businesses, as their preferred shopping environment.

These results lend support to the preexisting belief in the neighborhood that the unique businesses and layout of Andersonville are a draw, attracting people from both inside and outside the region. Visitors are consciously choosing this type of commercial district over others.

Aggregate Economic Impacts

Using the City of Chicago as the relevant jurisdiction, economic impacts were calculated and aggregated (all local businesses and all chain businesses). Including direct, indirect, and induced effects, we found that the ten local firms generate a combined $6.7 million in annual economic impact compared to $8.8 million for the ten chains.



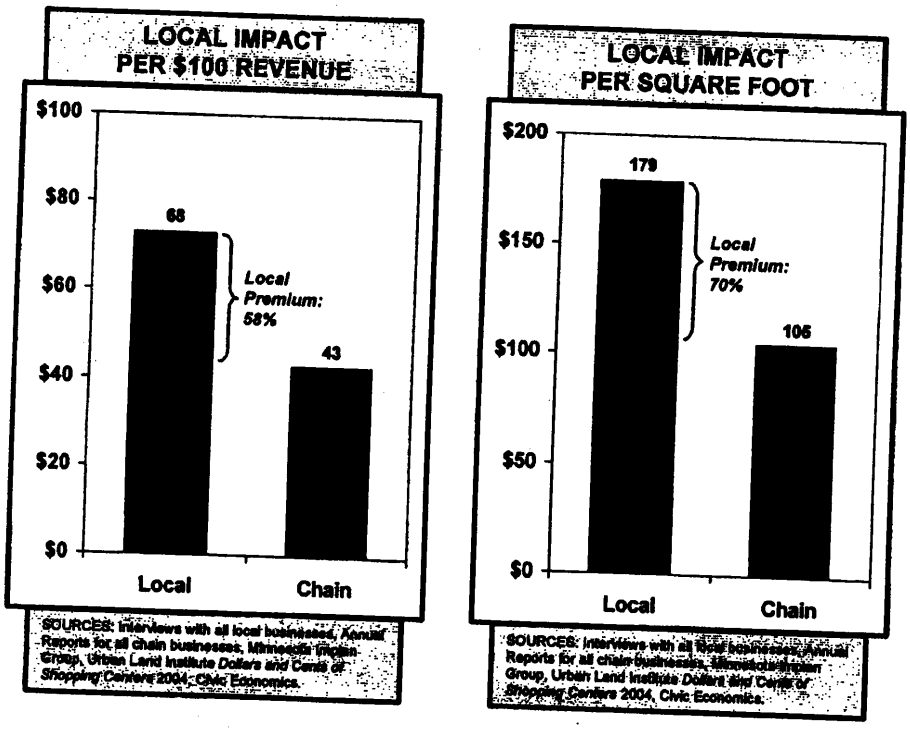
In this case, *direct* effects reflect the first round of local spending, such as wages and benefits, profits to local owners, local procurement, and charitable contributions. *Indirect* and *induced* effects reflect the continuing circulation of that first round of spending by businesses and individuals respectively.

Local economic impacts for businesses that serve a local market are primarily made up of four components: labor, profit, procurement, and charity.

Looking only at the chart above, the simplest policy conclusion jumps to the fore: these ten chain businesses create greater economic impact than the ten local firms. However, the following pages demonstrate that this simple assumption neglects to account for two essential variables: the revenue and square footage of each business. These variables, as we shall see, thoroughly erase the apparent economic impact advantage of chain businesses.

Adjusted Economic Impacts

Among the firms studied, chain businesses took in an average of over twice the revenue and occupied twice the square footage of the locals. Therefore, it was necessary to adjust raw economic impact values to account for these substantial differences. When those adjustments are made, the apparent economic impact benefit of the chain businesses is completely erased. The fact that locally-owned businesses ($263 revenue per square foot) and national chains ($243 revenue per square foot) generated comparable sales per square foot of retail space negates any size advantage the chains have over their locally-owned competitors.



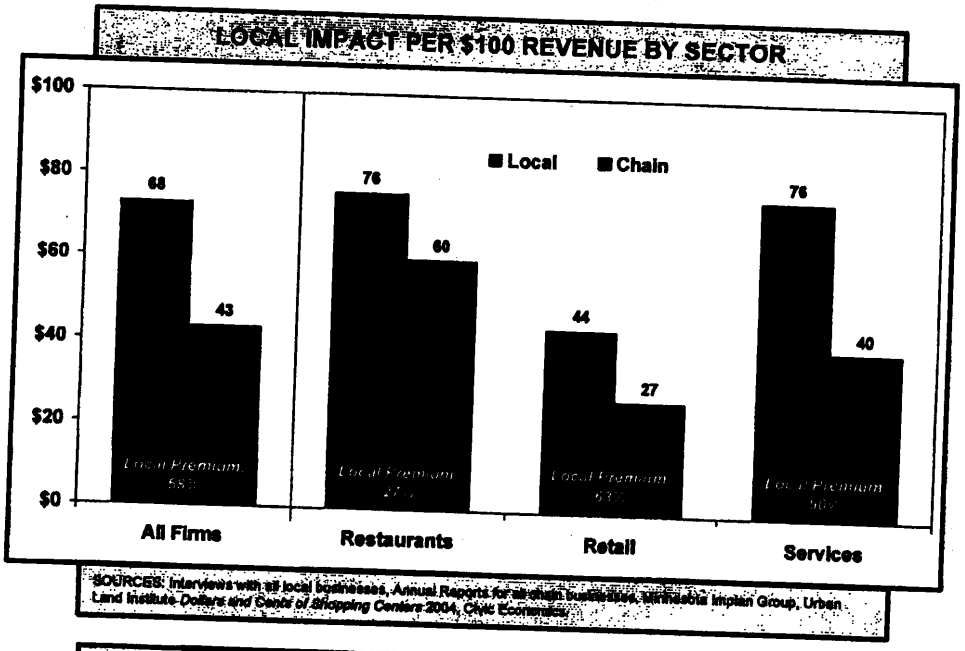
For every $100 in consumer spending with chain firms, $43 will remain in the local economy; if that same spending occurs with a locally-owned firm, that value jumps by 58 percent, to $68. Similarly, for every square foot of space occupied by a chain, the local economic impact is $105; if a local firm occupies that same space, impact jumps by 70 percent, to $179.

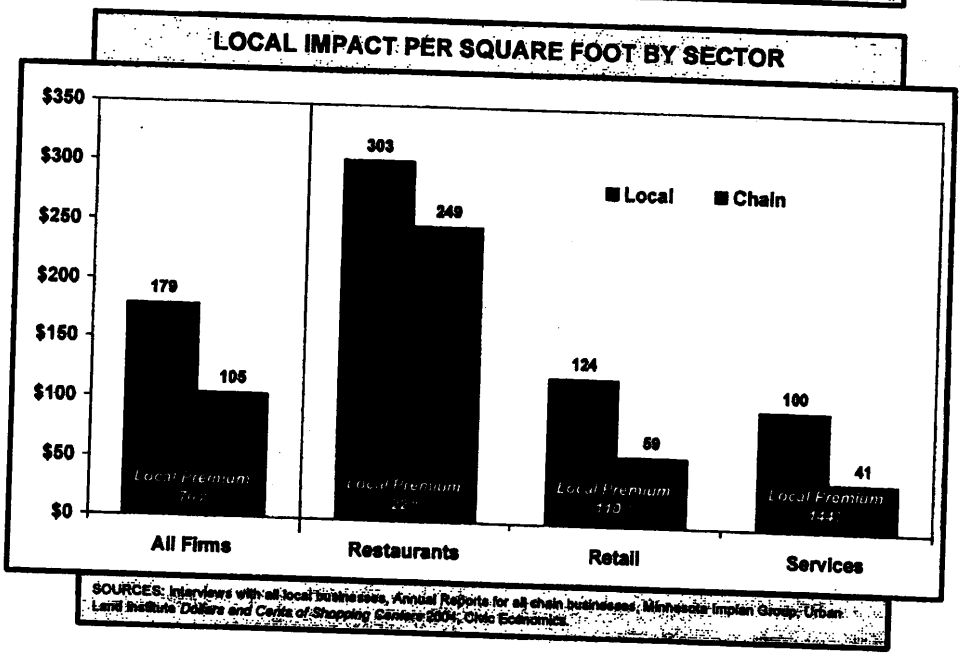
This Local Premium represents the quantifiable advantage to the city provided by locally-owned businesses. Whether measured as a share of revenue or by square footage, local firms generate a substantial Local Premium over their chain competitors. That means more money circulating in the local economy, which may mean more home improvement, more in the collection plate, and more in taxable transactions to fund city services.

Across the board, locally-owned businesses substantially exceed their chain competitors in all four components. For example, local firms spent an average of 28 percent of revenue on labor compared to 23 percent for chains. Additionally, eight of the ten local firms are owned by Chicago residents, so profits largely remain in the city. Local firms procure local goods and services at more than twice the rate of chains. Finally, locally-owned firms in the study contribute more to local charities and fundraisers than do their national counterparts and, although this provides the smallest local advantage of the four categories, this difference is important to the community.

Economic Impacts by Sector

In order to gain a fuller understanding of these results, businesses were further categorized as restaurants, retailers, and service providers. This further analysis reveals that the Local Premium ranges from 144 percent per square foot among service providers to 63 percent among retailers and 22 percent per square foot among restaurants.





These differences are largely accounted for by one factor: labor costs. Restaurants, for example, are heavily dependent on employed labor. Locally-owned restaurants tend to employ more workers, have them work slightly longer hours, and pay them slightly more than their chain competitors. Local service providers, at the other end, are heavily dependent on the labors of the owner while their chain competitors rely more on employees, resulting in the most substantial Local Premium.

Policy Implications

A careful reading of the data demonstrates that locally-owned businesses provide substantial economic benefits to the city, benefits that are in danger of being measurably diluted by increasing chain competition. While fair competition and consumer choice are the touchstones of urban economics, great care must be taken to ensure that public policy decisions do not inadvertently disadvantage local firms. Indeed, it may well be in the best interests of communities to institute policies that protect them.

Andersonville is a model for prosperous communities nationwide. There, Chicagoans offer a wide array of products and services, keep local dollars in the local economy, and contribute to Chicago's privileged place among American cities. But Andersonville and the dozens of neighborhoods like it are particularly threatened by the proliferation of chain businesses.

Future public policies in Chicago must seek to protect and promote the Andersonville model rather than facilitate its demise. Equally important is the matter of consumer choice. With each purchase, consumers put into play their hard earned dollars; the consumer's decision to patronize a local firm versus a chain competitor ripples through the economy with dramatic results.

COMPLETE REPORT

The complete analysis is presented in four sections as follows:

- **INTRODUCTION AND BACKGROUND** – putting the Andersonville Study in context, describing previous related studies and the origins of this one
- **METHODOLOGY** – outlining the analytical process followed by Civic Economics
- **FINDINGS** – presenting the results of this analysis through four steps:
  - Components of Local Economic Impact
  - Aggregate Economic Impacts
  - Adjusted Economic Impacts
  - Economic Impacts by Sector
- **POLICY IMPLICATIONS** – describing some practical applications of these findings for consideration by policy makers and consumers

INTRODUCTION AND BACKGROUND

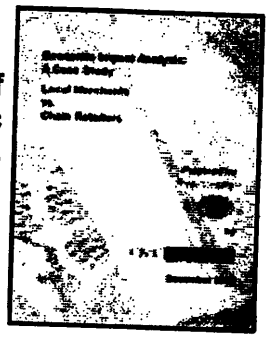
Civic Economics, the Andersonville Development Corporation, the Andersonville Chamber of Commerce, and Andersonville Special Service District Number Twenty-Two collaborated on this study, designed to evaluate the regional economic role played by independent businesses in this dynamic district on Chicago's North Side.

In short, the study was designed to calculate the economic impact of Andersonville's locally-owned businesses and assess the economic impact of increasing chain store activity in the region. Ten Andersonville businesses agreed to participate fully in the study, opening their books to analysts at Civic Economics in order to allow a thorough understanding of their revenue and expenses. In addition, the study included a survey of consumers visiting the Andersonville area.

Battles between national chains and local merchants have been raging for some time now. The argument for supporting local merchants has often been an emotional one, pleading for support in the name of intangible qualities associated with buying local: superior customer service, involvement in community affairs, wider range of quality goods, and personal attention. While these factors are important, the economic benefits that chains are able to claim, such as employment numbers and sales tax collections, may overwhelm even well intentioned and informed public officials who believe chain stores benefit the community more than do locally-owned stores.

The partners at Civic Economics contended that the emotional argument put forth by local merchants should be supplemented by solid economic research. We suspected that while the large national chains generated more revenue from sales, much of this money left the region in which it was generated. Civic Economics found a perfect test case in Austin, Texas to explore the theory.

Background - The Liveable City Study and beyond



The Andersonville Study is designed to build on a series of research that began in Austin, Texas in 2002. There Civic Economics was hired by the Austin Independent Business Alliance and nonprofit Liveable City to design and execute a limited study evaluating the likely economic impact of a big box outlet proposed for a corner already occupied by large local merchants selling identical goods.

Austin has faced a range of contentious choices in recent years. The community spirit has long been defined by the city's quirky personality, but explosive growth has dramatically changed the city. Contemporary notions of prosperity have threatened to transform Austin into another Houston or Dallas, with live music

and technological prowess reduced to economic development and tourism marketing hooks.

However, these forces have met with strong local resistance. One recent battleground was the intersection of Sixth & Lamar, at the western edge of the historic urban core. There, in the shadow of beloved local merchants BookPeople and Waterloo Records, a developer proposed to erect a strip center anchored by Borders Books & Music. Moreover, the city's complex smart growth ordinance resulted in development incentives exceeding $2 Million. Opposition to the development was emotional and shrill, providing little basis on which prudent city officials might step in and change the outcome.

The Civic Economics partners saw an opportunity to inject facts into the dialogue, providing public officials with a legal basis on which to act. We formulated a methodology and presented the idea to the local merchants involved. The merchants signed on, and additional funding and public relations support for the study were provided by Liveable City and the Austin Independent Business Alliance.

While the study began with no preconceived notions, the findings were remarkable:

> *For every $100 in consumer spending at Borders, the total local economic impact is only $13. The same amount spent with BookPeople or Waterloo Records yields more than three times the local economic impact, or $45.*

Building on that analysis, Civic Economics formulated three essential findings:

- Local merchants generate substantially greater economic impact than chain retailers.
- Development of urban sites with directly competitive chain merchants will reduce the overall vigor of the local economy.
- Modest changes in consumer spending habits can generate substantial local economic impact.

Since the release of the Liveable City Study[1], the work has been replicated in two communities. The Institute for Local Self-Reliance found nearly identical results in a study of retail activity in Mid-Coast Maine[2], and the University of Toledo[3] Urban Affairs Center found comparable results in a study of bookstores in Lucas County, Ohio. However, given the narrow focus of these studies, there has been no clear and accepted consensus regarding the applicability of these findings in other settings. Indeed, Civic Economics has repeatedly cautioned against

[1] Available for download at http://www.civiceconomics.com/Andersonville/Lamar_Retail_Analysis.pdf
[2] Available for download at http://www.newrules.org/retail/midcoaststudy.pdf
[3] Available for download at http://uac.utoledo.edu/Publications/Toledo-Merchant-Study-04.pdf

assuming the Liveable City findings were universal, given the unique attributes of the local merchants studied.

Civic Economics In Andersonville

The Andersonville neighborhood on Chicago's north side presents an ideal extension of the work begun in Austin. With its cohesive neighborhood organizations, dedicated and involved residents, and dense, thriving commercial district, Andersonville was an able and enthusiastic test subject.

Andersonville has become one of Chicago's most popular neighborhoods. From its beginnings as a Swedish enclave through today, its Clark Street core of unique, locally-owned businesses has been one of the main drivers of the community's success. However, its appeal is attracting increased interest from numerous chain stores looking to locate an outlet on Clark Street. Both residents and business owners are deeply concerned that the possible change in the neighborhood's character would be detrimental to both the quality of life and the commercial viability of the community.

The Andersonville Development Corporation and the Andersonville Chamber of Commerce were in search of empirical data to show whether a strategy of encouraging locally-owned, independent businesses was prudent and economically sound. The Development Corporation retained Civic Economics to study the impact of existing local businesses and compare that to prospective national competitors. This study was designed to provide more definitive answers required for the formulation of new urban development policies and the preservation of Andersonville's economic vitality.

METHODOLOGY

The Andersonville Study of Retail Economics was designed to measure the economic impact of twenty businesses, ten locally-owned firms operating in Andersonville and ten chain firms loosely identified as competitors or prospective competitors.

The first step in this process was to pick the actual companies from Andersonville that would comprise our local components. After consultation among the Andersonville Development Corporation, Andersonville Chamber of Commerce, and Civic Economics, it was decided that the companies should meet the following criteria:

- Located within the physical boundaries of the Development Corporation and Chamber of Commerce service areas
- Representative of the variety of retail, restaurant, and service firms that serve the neighborhood
- Drawn from throughout Andersonville's mile-long Clark Street commercial corridor
- Representative of the cultural and ethnic diversity of the community

Additionally, as there are several locally-owned franchises that serve the community, we decided that at least one locally-owned franchise should be included to ascertain where these firms fit in the local-chain dynamic.

Once these ten local firms were chosen, chain competitors were identified. The national competitors were chosen using the following guidelines:

- Offering the same general product line or service as a local firm
- Not located in Andersonville
- Publicly held, to ensure the availability of data
- Not headquartered in Chicago

The following chart shows the local and chain businesses ultimately selected for participation in the study:

ANDERSONVILLE STUDY FIRMS BY SECTOR

	Restaurant	Retail	Service
Local	Andies M Henry Star Gaze Swedish Bakery	Chicago Aquarium White Hen Women & Children	Joel Hall Toujours Visionary
Chain	Applebee's Denny's Olive Garden Panera	Petco Convenience Store Borders	Cinemark Supercuts Pearle

Three notes are appropriate regarding the chain businesses selected for study. Many of these corporations operate a mix of corporate-owned and franchised outlets; in those cases, the analysis covers only corporate outlets. For Cinemark, calculations assume a four-screen facility. Due to difficulties separating corporate and franchised convenience stores, we formulated data for a hypothetically average, corporate-owned convenience store of 2,000 square feet.

After the local and national matches were made, the interview process began to gather the data needed from the local companies. These interviews were conducted face to face with owners or representatives of the local businesses. Worksheets were designed to elicit total revenue and expenditure patterns for each firm, including supplier locations and employee residence.

These owners provided data, which we treated as confidential, addressing the four primary areas where these firms expend funds locally: labor, profit, procurement, and charity.

As this process moved along, comparable data for the national competitors were derived from a variety of reliable sources. Because all the firms chosen are publicly held, a wide variety of data were readily available. The majority of the data were drawn from Annual Reports to stockholders and 10K filings with the Securities and Exchange Commission. Where gaps needed to be filled, the following additional sources were consulted:

- Urban Land Institute's *Dollars and Cents of Shopping Centers: 2004*
- U.S. Economic Census
- Hoover's Online

After all data were collected, the numbers were inserted into a model developed by Civic Economics using IMPLAN multipliers for the City of Chicago. The model allows us to calculate the economic impact on the city for each business, and show it in various ways, including as a percent of revenue and per square foot of retail space. The results illustrate the differential impact of local firms and their national rivals. Because land use decisions and economic development policy are largely municipal functions, the City of Chicago was selected as the relevant jurisdiction.

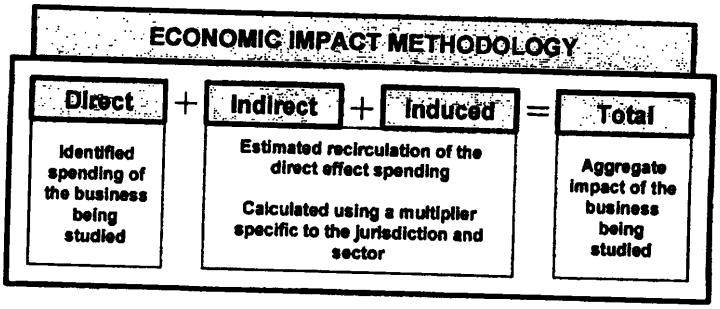
The Andersonville Development Corporation also conducted a Patron Preference Survey of 512 randomly selected shoppers within the neighborhood during the month of May 2004. While this survey was not scientifically formulated, it provided detailed background information about where patrons are coming from and why they choose to shop in Andersonville.

Economic Impact Analysis

Civic Economics builds its economic impact analyses around tools and data provided by the Minnesota Implan Group, publishers of IMPLAN software and datasets. The following provides a brief description of the analysis process.

For this analysis the study aims to measure the amount of money spent on retail goods and services that remain in the local economy after consumer purchases. Therefore, Civic Economics began impact calculations not with the revenues of the firms studied but with their expenditures. Conventional application of multipliers assumes that comparable retailers have comparable impacts. The modified model utilized here follows the revenues of each business one step further to identify the actual local expenditures of that firm. This allows us to determine true economic impacts.

In this study, total economic impact is the sum of three effects: direct, indirect, and induced. The box below describes our modified methodology for using multipliers to isolate only dollars kept local.



In this case, *direct* effects reflect the first round of local spending, such as wages and benefits, profits to local owners, local procurement, and charitable contributions. *Indirect* and *induced* effects reflect the continuing circulation of that first round of spending by businesses and individuals respectively.

Our analysis started with the direct effect spending, which was gathered from interviews with local companies and careful study of chain store corporate filings. Using this as the base, indirect and induced effects are calculated by way of multipliers, which capture the size of these effects as a ratio of total change in economic activity relative to direct effects. Multipliers provided by IMPLAN estimate indirect and induced effects and adjust for predictable leakage from the jurisdiction.

FINDINGS

The Andersonville Study of Retail Economics has produced a treasure trove of data. Civic Economics interviewed individual business owners to determine revenue and spending patterns for all ten local firms, and estimated the same data for chain businesses. To distill this massive dataset to an accessible form, we have organized it as follows:

- Aggregate Findings, including all local and all chain businesses
- Impact per $100 of Revenue, allowing a fair comparison based on consumer spending at each business
- Impact per Square Foot, allowing a fair comparison based on the space occupied by each business
- Sector Findings, grouping businesses as Restaurant, Retail, or Service

Table 1 provides a summary of key data for the analysis:

Table 1

LOCAL IMPACT SUMMARY

Local Businesses	Restaurants	Retail	Services	Total
	Star Gaze, Andies, Swedish Bakery, M Henry	Women & Children, Visionary, Joel Hall, Chicago Aquarium, Toujours White Hen		
Total Revenue	$ 5,406,000	$ 2,310,500	$ 2,050,000	$ 9,766,500
Retail Square Footage	13500	8100	15500	37100
Revenue per Square Foot (psf)	$ 400	$ 285	$ 132	$ 263
Total Local Impact	$ 4,090,402	$ 1,005,570	$ 1,555,887	$ 6,651,859
Local Impact per $1 Revenue	0.76	0.44	0.76	0.68
Local Impact per Square Foot	$ 303	$ 124	$ 100	$ 179
Chain Businesses	**Restaurants**	**Retail**	**Services**	**Total**
	Applebees, Olive Garden, Panera, Denny's	Borders, Petco, Average C-Store	Pearle, Cinemark, Supercuts	
Total Revenue	$ 9,306,994	$ 8,962,896	$ 2,212,222	$ 20,482,112
Retail Square Footage	22330	40500	21500	84330
Revenue per Square Foot (psf)	$ 417	$ 221	$ 103	$ 243
Total Local Impact	$ 5,550,439	$ 2,392,347	$ 886,856	$ 8,829,641
Local Impact per $1 Revenue	0.60	0.27	0.40	0.43
Local Impact per Square Foot	$ 249	$ 59	$ 41	$ 105

SOURCES: Interviews with all local businesses, Annual Reports for all chain businesses, Minnesota Implan Group, Urban Land Institute *Dollars and Cents of Shopping Centers* 2004, Civic Economics.

In the pages that follow, we will review this data in aggregate (all local and all chain businesses), and by sector. We cannot, however, reveal detailed data for any participating business.

Components of Local Economic Impact

The lion's share of the local economic impact of retail and service businesses is attributable to four factors: labor, profit, procurement, and charity.

Spending on local labor comprises a larger share of operating costs for a locally-owned establishment than for an outlet of a national chain. While the latter are able to consolidate administrative functions such as bookkeeping and marketing at national headquarters, independents must carry out those functions in-house or outsource within the community. Additionally, economies of scale and carefully engineered store layouts may allow national chains to employ fewer onsite staff than do locally based firms. In this study the local firms spent, on average, 29 percent of total revenue on labor costs while the national chains spent 23 percent of revenue on labor.

Secondly, a larger portion of profits earned by local ownership will remain in the local economy. Purchases of goods, services, and meals at chain outlets generate profits for the corporation, which then either reinvests in global operations or distributes a portion of profits to shareholders. In either case, chain stores profits circulating in the local economy are nominal.

Third, locally-owned businesses procure a wider array of goods and services in the local marketplace. These include goods for resale, business supplies, and professional services, among others. For the local and chain firms studied here, local procurement was roughly twice as high for local businesses (6.0 percent of total revenue) as their chain competitors (2.9 percent of total revenue).

A smaller yet significant share of the local advantage is charitable giving. The owners and employees of local firms generally live in and around their business locations and are more likely to give back to their own backyard. National firms may be more likely to donate to charities near to corporate headquarters or other large corporate facilities.

Aggregate Economic Impacts

Local impacts were first determined without making adjustments for differences in revenue and square footage. In general, the chain businesses studied draw higher total revenue and occupy larger spaces, though sales per square foot are comparable.

Chart 1 shows the total local economic impact of our ten local businesses and of their ten chain competitors. While the local firms generate an economic impact of $6.7 Million on revenue of $9.8 Million, the chains would generate a local economic impact of $8.8 Million on revenue of $20.5 Million.

Chart 1

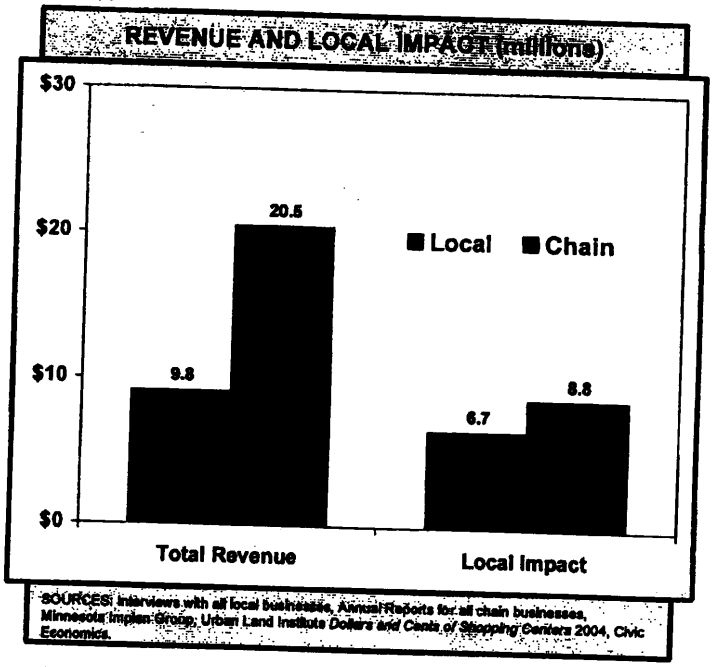
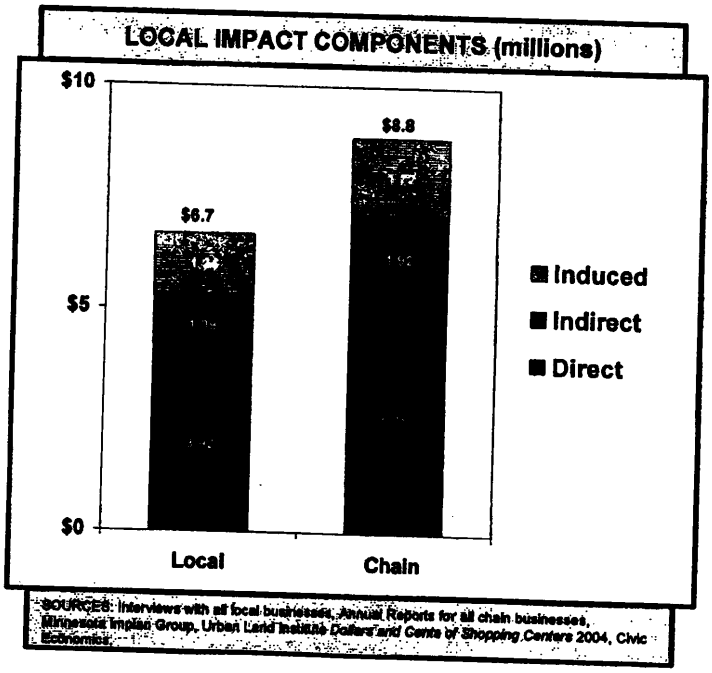


Chart 2 provides more detail, revealing the components of the impact calculation: direct, indirect, and induced.

In this case, *direct* effects reflect the first round of local spending, such as wages and benefits. *Indirect* and *induced* effects reflect the continuing circulation of that first round of spending by both businesses and individuals. For more detail on economic impact analysis and the meaning of these components, please review the Methodology section of this document on page 10.

Chart 2



In each chart, the simplest policy conclusion jumps to the fore: these ten chain

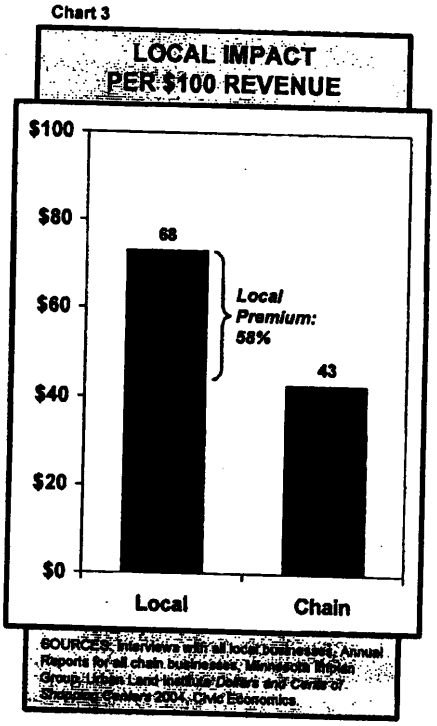
businesses create greater economic impact than the ten local firms. However, the following pages demonstrate that this simple assumption neglects to account for two essential variables: the revenue and square footage of each business. These variables, as we shall see, thoroughly erase the apparent economic impact advantage of chain businesses.

Adjusted Economic Impacts

In order to evaluate the true economic impact of any business, it must be placed in the context of the local economy, in this case the City of Chicago. Two important considerations must be added into the calculus: revenue and store size. For each factor, we have calculated a Local Premium, reflecting the additional economic impact of local firms expressed as a percentage increase over the impact of competitor chain firms.

By Revenue: Chart 3 illustrates the economic impact of local and chain businesses adjusted for total revenue, revealing that $100 in consumer spending with a mix of local businesses generates $68 in local economic impact. By contrast, the same $100 spent with competitor chains generates only $43 in local economic impact. The Local Premium in economic impact is a striking 58 percent relative to chains.

Chart 3



Consumer spending in large retail markets is relatively inelastic; that is, the presence of any given business will not change total consumer spending over an extended period of time. For example, it may well be that the arrival of a new Olive Garden in a location such as Andersonville will briefly generate greater restaurant sales in the area, but it cannot be assumed that it will increase overall restaurant sales in the city. The reason for this is simple: household discretionary spending is a function of household income, not a function of choices. Because sales tax revenue is a function of retail sales activity, the chain stores studied here are largely revenue neutral in that regard.

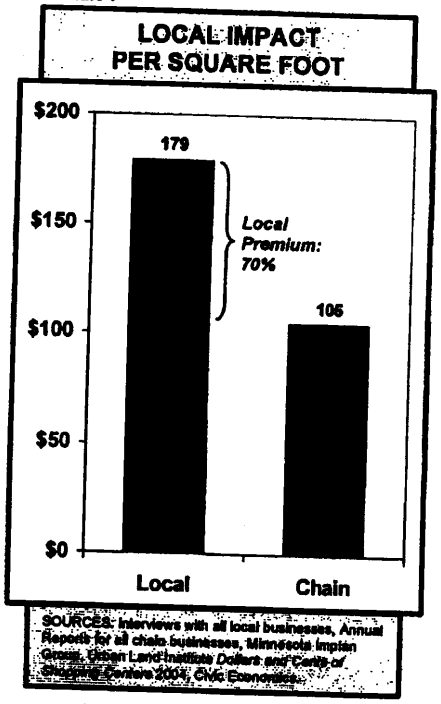
We do recognize that certain businesses are an essential component of a city's tourist matrix, contributing to the attraction of visitors and their money. The chain businesses studied here are quite common and unlikely to generate additional sales activity in the City. On the other hand, it is clear that the unique mix of firms in Andersonville does bring shoppers from beyond the City. The Patron Preference

Survey conducted in coordination with this study revealed that the primary attractions of Andersonville are its mix of local businesses and traditional urban setting. The area draws spending into the city, which cannot be said of an agglomeration of common chain stores. Indeed, 10 percent of all respondents reside outside the City of Chicago.

By Size: Chart 4 illustrates the economic impact of local and chain businesses adjusted for total square footage. For every square foot occupied by local businesses, the economic impact in the City of Chicago reaches $179. By contrast, for every square foot occupied by chains, the economic impact reaches only $105. The Local Premium is a striking 70 percent relative to the chains.

The chain firms studied here occupy spaces twice as large as their local competitors. They also achieve total sales roughly twice as high. Local and chain businesses in the study attain comparable sales per square foot, $263 for locals and $243 for chains. This figure will surprise many, and it is of significance in evaluating the economic impact of chains.

Chart 4



Urban policy makers pay close attention to real estate occupancy and absorption rates, as improvements in these measures reflect the health of the local real estate market. National chains are often believed to improve these measures, if only because they occupy more space per outlet. Returning to the example of the typical Olive Garden, on opening day the restaurant has occupied 8,200 square feet of space. However, if the revenue to support that square footage is merely diverted from other businesses in the area, its impact on occupancy and absorption will be negated over time.

So, where policy makers might be tempted by the aggregate impacts outlined above, adjustments for revenue and size dispel the notion that chains will generate greater sales tax revenue or more effectively utilize the city's real estate. The gradual replacement of local firms with chain competitors instead produces serious negative consequences, denying the community and its citizens the benefits of the Local Premium.

Economic Impacts by Sector

Given the variety of businesses participating in this study, Civic Economics was given a unique opportunity to see how outcomes differ by the nature of the business. In this case, we have sorted firms into three sectors: Restaurant, Retail, and Services.

- Local restaurants include Star Gaze, Andies, Swedish Bakery, and M Henry; competitors include Applebee's, Olive Garden, Panera Bread, and Denny's.
- Local retailers include Women and Children First, Chicago Aquarium and Pond, and White Hen; competitors include Borders, Petco, and a hypothetical company-owned convenience store.
- Local service providers include Visionary Eye Care, Joel Hall Dancers, and Toujours Spa and Salon; competitors include Pearle Vision, Cinemark, and Supercuts.

As with the analyses above, we adjusted these impact analyses to account for variations in revenue and square footage. The aggregate Local Premium is substantial, whether adjustment is made for revenue or size; however, these variables play out quite differently when the data is broken out by sector.

Chart 5 illustrates the economic impact per $100 of revenue across the three sectors.

Chart 5

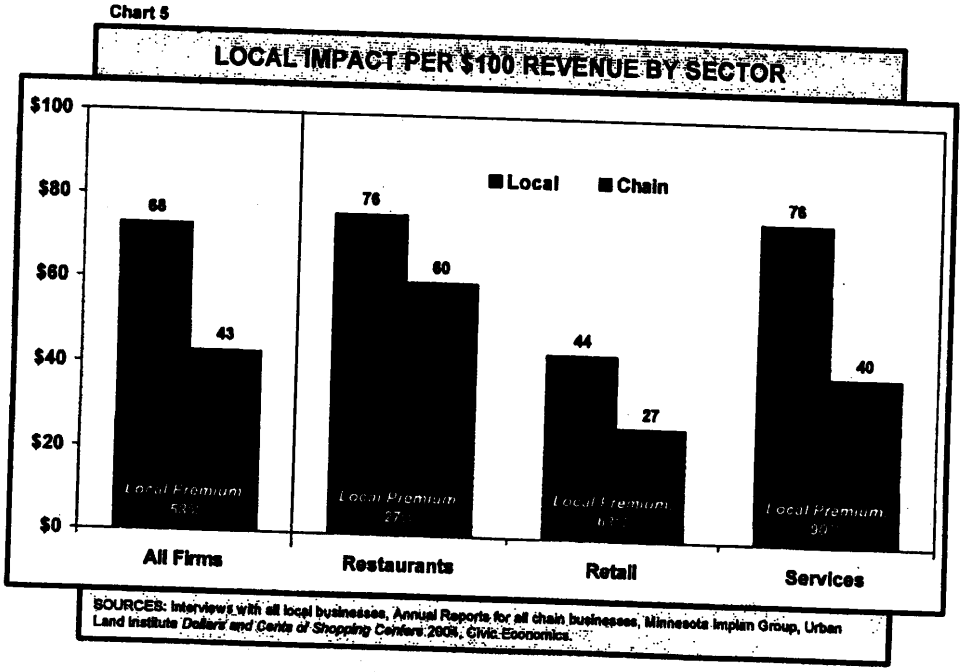
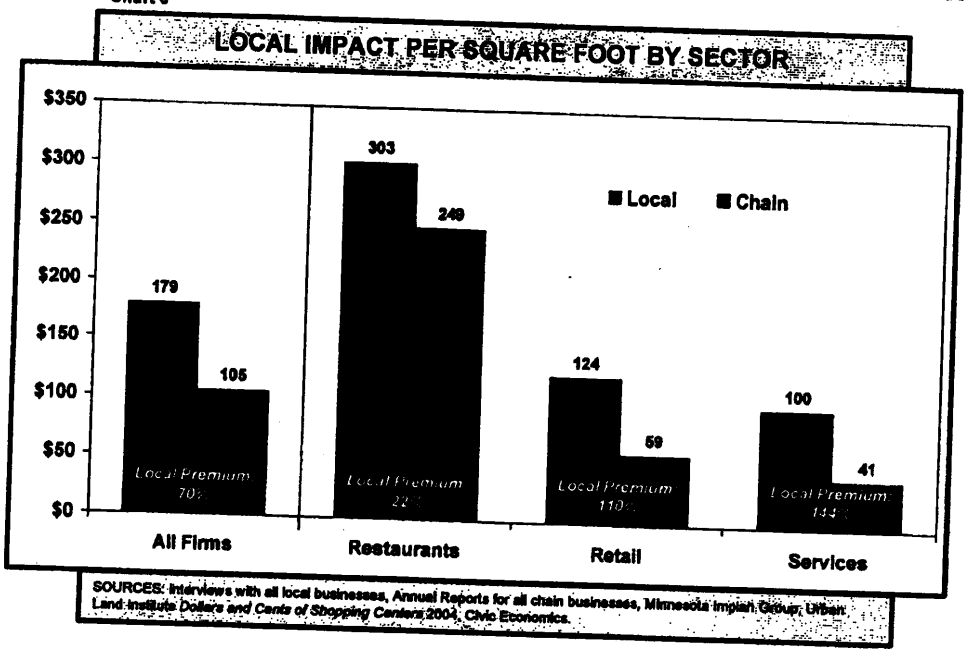


Chart 6 illustrates the economic impact per square foot across the three sectors.

Chart 6



Much of the difference in impact among the sectors is accounted for by labor costs. Moreover, these costs are heavily localized, as employees and proprietors are drawn largely from within the City of Chicago.

Among restaurants, for example, labor costs ranged from 20 percent of total revenue to 43 percent of total revenue. Labor costs at local restaurants averaged 28 percent, kept low by two operations in which owners provide substantial labor while taking little in wages and profits. At chains, labor costs averaged 34 percent, though only one operator, Denny's, exceeded the average, reporting a surprising 43 percent.

Service providers, perhaps predictably, expend a large portion of revenues on labor. However, the data make clear that locally-owned firms expend a much larger portion on labor, including both employees and proprietors. Indeed, though we did not evaluate wage and benefit rates for individual employees, it appears that the presence of an owner is a significant factor in the extraordinary Local Premium among service firms

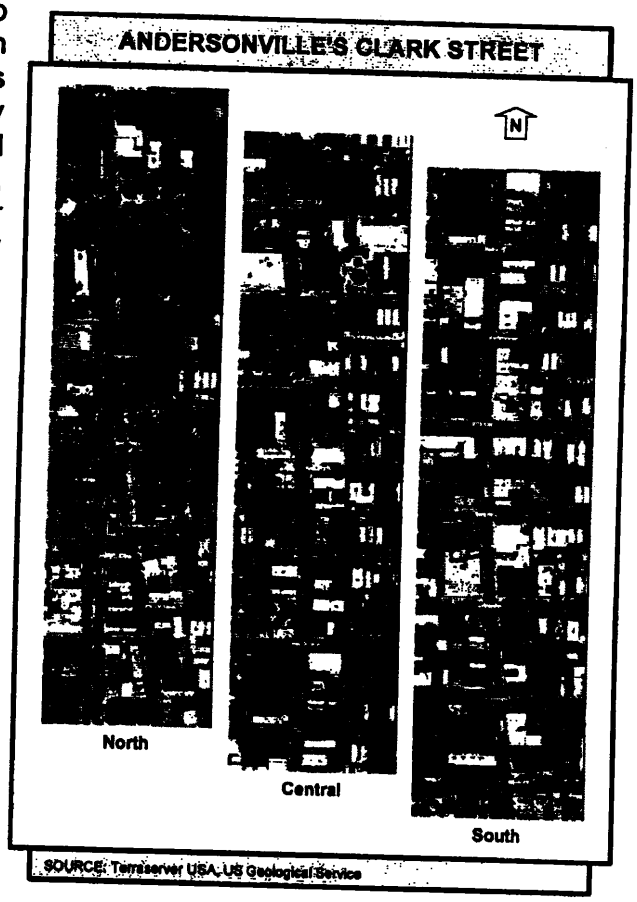
One last area of analysis was the impact of a locally-owned franchise in comparison to a wholly corporate-owned and operated chain store. In this case the locally franchised White Hen Pantry mirrored a nationally owned chain store in most expenditure categories with the major difference being that bottom line profit for the franchisee remained in the community. This provided a Local Premium for the locally-owned franchise, albeit much slimmer than the other locally-owned businesses present over their competitors.

POLICY IMPLICATIONS

With so much data collected for the Andersonville Study, we are certain that interpretation will continue long after its release. However, several significant policy implications should be noted here.

Creativity, Opportunity, and Prosperity

Civic Economics is dedicated to the pursuit of those attributes in client communities. The findings of this study demonstrate strongly that the Andersonville model (diverse offerings, human scale, locally-owned businesses) is far superior to the increasingly common suburban model (consolidated offerings, auto scale, chain businesses) in promoting those attributes.



In the age of the mobile "creative class," American communities seek to promote and celebrate their unique attributes. Chicago has led the way in celebrating cultural diversity, neighborhood vitality, and a distinctly midwestern urbanism. These are the very attributes on display in Andersonville and those most directly threatened by the proliferation of chain businesses.

Civic Economics made no attempt in this study to evaluate wages and benefits. However, we can say with certainty that the Andersonville model of diverse local firms provides an opportunity for entrepreneurship severely constrained by chain proliferation. As yesterday's proprietors become tomorrow's employees, there can be little doubt that something has been lost.

[redacted] The Local Premium identified above is a real and quantifiable demonstration of the drainage of dollars from the community by chain businesses.

Neither Civic Economics nor its Andersonville clients will argue that chain firms have no place in the city. Fair market competition plays an essential role in any economy, and consumer preferences must be respected. However, policy makers must ensure that the playing field is level, that local firms are not inadvertently disadvantaged by faulty premises or unintended consequences.

Urban Redevelopment and Chain Retail

Like other major cities adjusting to new economic realities, Chicago faces the monumental challenge of redeveloping obsolete and blighted sites. The city has achieved unparalleled success in doing so. Across the city, new and rehabilitated buildings provide appealing and accessible options in the spirit of New Urbanism, filling gaps in the urban fabric and in municipal revenues. Chicago has pioneered an array of planning and development tools to achieve this success, providing public support and incentives for redevelopment projects.

However, any tour of such sites will reveal a troubling fact: chain outlets anchor many redevelopment sites. As a result, these projects introduce new, often publicly subsidized, competition to local businesses. As demonstrated in this study, that unbalanced competition siphons dollars and economic vitality from the community as consumers move spending from locals to chains.

During BookExpo 2004, held in Chicago, Civic Economics led a discussion of this phenomenon with America's leading independent booksellers. They reported common experiences from Miami to Seattle.

Developers of these sites share an urban vision of lively, pedestrian-friendly neighborhoods. Architectural renderings depict bookstores, restaurants, and coffee shops with distinctive local flourishes. Municipalities offer a variety of incentives to make the vision a reality. However, the reality often diverges in substantial ways as developers follow conventional leasing strategies, signing chain stores and formula restaurants to the most prominent storefronts. From these privileged locations, subsidized chains gain a competitive advantage over nearby independents.

We believe that cities can capture all of the advantages of redevelopment without inadvertently harming local merchants. Incentive conditions and development guidelines can promote the placement of unique local businesses in new projects. Risk to the developer can be reduced through lease guarantees or low interest financing with minimal exposure to the city. Modest changes in planning and development practice will allow the continued revitalization of Chicago without diluting the city's unique character or foregoing the Local Premium provided by local firms.

Public Revenue and Economic Development

Policy makers rightfully seek to maximize public revenues without raising tax rates, and often proceed on the assumption that attracting local outlets of national chains will do that. However, the findings above demonstrate that their arrival is, at best, revenue-neutral even in the near term. Moreover, the inevitable long-term consequence of forgoing the Local Premium identified above is a gradual decrease in public revenues, as those dollars are no longer available to generate taxable transactions within the city.

Economic development policy did not focus on chain businesses until the recent economic downturn. Faced with a dearth of factory and headquarters prospects, practitioners found their best prospects in chain stores and restaurants and have portrayed these as economic development "wins." As it must often do, Chicago can lead the way in repudiating this counterproductive approach to economic development.

Factories or corporate headquarters, which produce goods and services for export, drawing dollars into the community and clearly enhancing the local economy and tax base, are the legitimate and traditional targets of economic development policy.

Stores, restaurants, and service providers, by contrast, produce goods and services for local consumption. In general, the dollars that enter these businesses are the dollars of Chicagoans. Therefore, the appropriate measure is not how much revenue any outlet earns but rather how much of that revenue it shares with the community rather than siphons from it. The findings of this study make clear that economic development goals are actually hindered when chain businesses receive preferential treatment.

We do recognize that certain chain stores and restaurants are an essential component of a city's tourist matrix, contributing to the attraction of visitors and their money. However, those firms are exceptional and in no case can the chain firms studied here be recognized as tourist draws. In fact, as the Patron Preference Survey demonstrates, it is traditional business districts like Andersonville that provide Chicago an edge in attracting visitors and their spending.

Urban Design Considerations

Chicago's distinct urban character is on display on Clark Street in Andersonville. Buildings are scaled to pedestrians and present a street wall that is varied yet harmonious. These buildings provide relatively small spaces for hundreds of retailers, restaurants, and service providers. Patrons are pulled along the street by diverse shop windows and signage.

If chain competitors supplanted the local businesses of Andersonville, that streetscape would be dramatically and adversely affected. The chains studied here average twice the square footage of the locals. Shop windows, entrances, and signs would thus be stretched twice as far apart. Small structures that have served the neighborhood for decades would be rendered obsolete, either abandoned or replaced by larger formulaic structures.

Perhaps more importantly, Andersonville shares these attributes with dozens of neighborhoods throughout the city, all of which are similarly under assault. While generic agglomerations of chain stores are widely available throughout the metropolitan area, these traditional urban districts offer a distinct character that cannot be replicated.

The Customer Preference Survey conducted by the Andersonville Development Corporation highlights this distinction. When asked to express a preference on the type of business shoppers choose to patronize, over 70 percent chose locally-owned businesses while less than three percent chose chain businesses. Additionally, an overwhelming 80 percent of respondents identified Andersonville's traditional neighborhood district as their preferred shopping environment.

These results back up the belief in the neighborhood that Andersonville's unique businesses and layout are a draw, attracting people from both inside and outside the region. Indeed, among survey respondents, over 10% were from outside the City of Chicago. Districts such as Andersonville provide the City with a unique advantage, drawing patrons from throughout the region and offering tourists an experience they are unlikely to find at home.

The Economic Impact of Consumer Choices

The Andersonville Study was crafted to provide policy makers with the information they need for rational decision-making. However, we would be remiss if we failed to address another critical audience with the power to make a substantial difference in the economic health of Chicago: consumers.

From a bottle of soda to a night on the town, from books and fish to eye care and dance lessons, the businesses studied here offer a range of goods and services that ordinary Chicagoans purchase every day. With each purchase, consumers put into play their hard earned dollars; the consumer's decision to patronize a local firm versus a chain competitor ripples through the economy with dramatic results.

The ten local firms participating in this study generate nearly $10 Million in revenue each year. Of that sum, roughly $6.8 million remains in Chicago. Were consumers to abandon these firms and direct that $10 million in spending to their chain competitors, only $4.3 million would remain. The missing millions would have flown off to corporate offices outside the region. Once siphoned away, that

money cannot go to employ Chicagoans, to improve Chicago homes, or to support Chicago churches and charities.

In one of the largest urban economies in the nation, these few million dollars may seem insignificant. Yet it must be remembered that we have studied here only ten small businesses in one Chicago neighborhood. The $10 Million in revenue we followed here is but a drop in the city's total sales of goods and services, which is measured in the tens of billions.

While we cannot make claims about the applicability of these exact figures beyond the businesses studied here, it is clear that the purchasing decisions of Chicago consumers determine the fate of billions of dollars. Whether that money stays or goes is dependent upon the individual shopping choices of individual consumers.

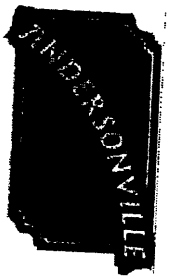
The Bottom Line

Andersonville is a model for prosperous communities nationwide. There, Chicagoans offer a wide array of products and services, keep local dollars in the local economy, and contribute to Chicago's privileged place among American cities. But Andersonville and the dozens of neighborhoods like it are particularly threatened by the proliferation of chain businesses.

Public policy in Chicago must seek to protect and promote the Andersonville model rather than facilitate its demise. Indeed, it may be in the best interests of communities to institute policies that directly incentivize them.

ABOUT THE STUDY

About Andersonville



Andersonville is a distinctive neighborhood on the north side of Chicago. Locally-owned businesses have been a primary element in its success throughout its history. First established as a farming community in the 1850s, the retail district began as an enclave of small businesses when Swedes moved north to escape the neighborhoods that had been ravaged by the Great Chicago Fire in 1871. The residential community remained primarily Swedish for decades, until, like many established groups, the Swedes began migrating to the suburbs in the 1950s.

In 1964, the small business owners banded together to organize a huge parade, led by Mayor Richard J. Daley, in a celebration to rededicate the neighborhood to its Swedish roots. In the mid-1980s, the neighborhood was experiencing disinvestment in the commercial district. The business owners again organized, with the help of locally-owned banks, and provided financing for new start-ups to revitalize the district, as well as community-wide marketing. The combined efforts drew key new local enterprises onto Clark Street, and with them came renewed interest in Andersonville's residential areas.

Today, Andersonville is one of Chicago's most popular neighborhoods. It is still considered one of the most concentrated areas of Swedish culture in the United States and is home to the renowned Swedish American Museum. In addition, Andersonville hosts a diverse assortment of devoted residents and businesses, including one of Chicago's largest gay & lesbian communities, a large collection of Middle Eastern restaurants and bakeries, and a thriving Hispanic commercial area on its north end.

Discover the small-town charm of Chicago's Andersonville neighborhood. A great place to start is the website of the Andersonville Chamber of Commerce, *www.Andersonville.org*.

About Civic Economics

Civic Economics is an economic analysis and strategic planning consultancy with offices in Austin and Chicago. Since its founding in 2002, the firm has established itself as a leader in progressive economic development, taking its unique vision of sustainable prosperity across the USA and Mexico.

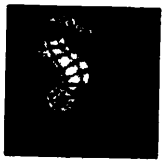
CIVIC ECONOMICS
CREATIVITY · OPPORTUNITY · PROSPERITY

More importantly, the firm has emerged at the center of a network of planners and independent businesses promoting reasoned analysis of the evolving American retail scene. We've provided information and counsel to dozens of civic organizations in the USA and Canada. Our observations have appeared in news outlets from New York Times to San Diego. We have developed an unmatched understanding of the dynamics of local retail and service provision, a library of best practices information, and a network of contacts from business, government, and civic organizations nationwide.

Learn more about the firm and "*The Civic Economics of Retail*" by visiting us online at www.*CivicEconomics.com*.

Participating Firms

Andies Restaurant is a family owned restaurant serving Mediterranean, Lebanese, and Greek foods. Owner Andie Tamras has been serving Andersonville residents and visitors for 30 years. He participates in many local fundraisers and enjoys being a community destination for many holiday meals.



The Chicago Aquarium and Pond Company meets all the needs of the pond and aquarium hobbyist. It was started back in 1981 and owners Harold Ellis and Ken Riley have lived above their shop since 1988. As such, they are invested in Andersonville in both their professional and personal spheres.

The Joel Hall Dancers and Center was founded in 1974 by Joel Hall and Joseph Ehrenberg. Offering over 150 weekly classes for dancers of all ages, the studio reaches out to those who would not otherwise be exposed to the arts for classes, educational outreach programs and performances.

M Henry is a recent addition to the Andersonville scene. This restaurant features a breakfast and brunch menu that puts a modern spin on some classic dishes. Owner Michael Moorman chose a location at the northern end of the neighborhood, expanding the geographic diversity in Andersonville.

Star Gaze is a restaurant and bar catering primarily to the neighborhood's lesbian population. The community minded owners donate time and space to many nonprofit organizations that cannot afford those expenses.

Swedish Bakery is the ultimate neighborhood sweet shop. Traditional Swedish products are featured, as well as a selection of other European and old fashioned American items. An expansion in 1989 tripled the size of the Swedish Bakery, raising employment from 19 to its current 55 employees.

Toujours Spa and Salon is another recent addition to Andersonville. This upscale salon and spa provides a service more commonly found downtown. The quality of work provides residents of Andersonville an amenity they once had to travel outside the neighborhood to enjoy.



Visionary Eye Care is a full service eye care facility, providing a unique health service and a full range of stylish eyewear. Drs. Michael Ciszek and Barbara Butler-Schneider and all their employees live in Andersonville.



White Hen Pantry is the locally-owned outlet of a well-known convenience store franchisor. Owner Cecilia Lemus was an employee at the store before recently purchasing the franchise rights.



Women and Children First is one of the largest feminist bookstores in the country, with over 30,000 books, and plays host to many book signings and events from local, regional, and national figures. Co-owner Ann Christopherson has been a vocal proponent of independent bookstores and retailers throughout the country and has recently served as President of the American Booksellers Association.

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To learn more about the Andersonville and to obtain copies of study documents, please visit *www.AndersonvilleStudy.com*.

EXHIBIT D

Competing with the Discount Mass Merchandisers

A Study by

Dr. Kenneth E. Stone

Professor of Economics &
Extension Economist

Iowa State University

1995

IMPACT OF WAL-MART STORES AND OTHER MASS MERCHANDISERS IN IOWA, 1983-1993*

INTRODUCTION

The nature of retailing has changed dramatically in the last decade, compared to previous decades. In the last decade there has been a great proliferation of discount general merchandise stores as Wal-Mart, K Mart, Target and several regional chains. In addition there has been a great expansion of membership warehouse clubs, such as Sam's, Pace, Cosco, and Price Club. There has also been rapid expansion of "category killer" stores such as Home Depot, Circuit City, Best Buy, Toys "R" Us and others. These stores are called category killer stores because they have a very large selection within a narrow category of merchandise, along with low prices, and they " kill" smaller local stores within the same "category". We have also seen the development of many new factory outlet malls and the spread of specialty mail order. The net result of this expansion is the saturation of many retail markets, or what is commonly referred to as the **overstoring** of America. Many retail markets have more retail stores than can possibly be supported, and it would appear that a major shakeout is coming in the not-too-distant future.

Why the Study?

This study is an annual update of my original study of the impact of Wal-Mart stores completed in 1988. The 1988 study was conducted at the request of several Iowa merchants and chamber of commerce executives. Wal-Mart stores began locating in Iowa in 1983 and local residents did not know much about them, thus prompting requests for information. Iowa has an excellent sales tax reporting system, but because of a lag in reporting and in the initial slowness of the Wal-Mart expansion, it was 1988 before enough data was available to conduct the first study.

The purpose of the studies was to document changes in retail sales in the host community and in surrounding communities. Once the changes were identified, then educational programs could be designed to assist local business people better cope or co-exist in the new mass merchandiser environment.

*by Kenneth E. Stone, Professor of Economics, Iowa State University

STUDY METHODS

Initially, it was decided to study the impact of Wal-Mart stores in communities between 5,000 and 30,000 population, because in 1988 that was where most of the stores were located. Since the original study, Wal-Mart stores have located in all the larger cities, but the impact there will be the subject of a separate study. This update through fiscal year 1993 will continue to examine the impact on communities with populations between 5,000 and 30,000 population.

Data Sources.

Retail sales data came from the *Iowa Retail Sales and Use Tax Reports*, published annually by the Iowa Department of Revenue and Finance. The department has a long history of publishing this data for virtually every town and city in the state. Sales of all taxable goods and services are reported by two digit Standard Industrial Classification (SIC) Codes for communities over 2,500 population, if the community has five or more businesses within the category. The two digit classification is a broad description of businesses such as food, general merchandise, building materials, etc. Statewide sales are also published at the more detailed three digit SIC level. For example, in the building materials category, statewide sales would be reported for hardware stores, lumber yards, paint and glass stores, etc.

Comparison of Data.

The simplest method of analysis would have been to compare retail sales for each of the communities. However, this is not a very satisfactory method since it does not take into account changes in price inflation, population and economic cycles. Instead, we chose to use a derivative called the pull factor in this comparison. The pull factor is merely the per capita sales of the community divided by statewide per capita sales. Community per capita sales are calculated by dividing the community's retail sales by the community population. Likewise, the statewide per capita sales are computed by dividing the total state retail sales by the state population. The equation for determining a pull factor is shown below.

$$PF = \frac{PCSc}{PCSs}$$

Where: PF = pullfactor
PCSc = per capita sales for a community
PCSs = per capita sales for the state

For example if a town had a per capita sales of $8,500 per year and the statewide per capita sales were also $8,500 per year, the pull factor for the town would be calculated by dividing the community's $8,500 by the statewide $8,500 and the pull factor would equal 1.0. The interpretation would be that the community's retail sales amounted to selling to the equivalent of 100 percent of the community population in terms of full time customer equivalents. When a pull factor is less than one (say 0.6, for example) the interpretation is that the community is selling only to the equivalent of 60% of the community population. Conversely, when a pull factor is greater than one (say 1.5, for example), it would be concluded that the community is selling to the equivalent of 150 percent of the community population, a fair sized trade area.

In fact, in most cases, some community residents would purchase some or all of their retail goods in other communities, while other people from the surrounding area would purchase some or all of their retail goods in the subject community. As was stated before, the pull factor makes adjustments for changes in population, price inflation and economic cycles. Pull factors can be computed for total sales and for two digit SIC codes.

Comparison by Time Period.

The first Wal-Mart stores opened in Iowa in 1983, and then a small number were opened each year thereafter, reaching a total of 45 by fiscal year 1993. This study analyzes 34 towns with populations between 5,000 and 30,000 population. We thought it important that we be able to measures the change in sales for different types of stores, both in the host community and other communities for successive years after a Wal-Mart opening and then to generalize as to the average impacts after one year, two years, three years, etc. However, with the store openings spread over such a long period of time, a method had to be devised to make equitable and meaningful comparisons. That method is discussed below.

Base Year. The base year for comparison for each community was the last full year before a Wal-Mart store opened there. For example, if a store opened in Marshalltown in 1983, the base year was 1982. Each successive year of operation would then be compared to the base year of 1982, using the pull factors. For example, if Marshalltown's pull factor for total sales in 1982 was 1.50 and in 1983 after one year of Wal-Mart it increased to 1.56, an increase of four percent was calculated. The pull factor for 1984 would then be computed and compared to that of 1982 to see the cumulative change after two years, etc. In other words, successive year changes vary among towns, but in each year's comparison, changes in price inflation, population, and the state's economy are always taken into consideration. The first year changes for different communities are then averaged as are the successive year changes, even though they may be for different calendar years.

A Basic Premise. A basic premise lies at the heart of this study. The premise is that in areas of somewhat static population (such as in states like Iowa) the size of the retail "pie" is relatively fixed in size for a given geographical area. Consequently, when a well-known national chain like Wal-Mart opens a large store in a comparatively small town, it invariably will capture a substantial slice of the retail pie. The end result is that other merchants in the area will have to make do with smaller slices of the retail pie, or get out of business. In areas of the country where the population is growing rapidly, there is room for more retail establishments and the effect will be diluted considerably.

RESULTS

The study found both plusses and minuses for the merchants in the host town. The major plus for most businesses was that in virtually all cases, total sales in the town increased at a rate greater than average for the state. Apparently Wal-Mart stores attracted customers into town from a greater radius than had occurred before their entry into the town. After the first two or three years, however, most Wal-Mart towns reached a peak in sales and then began a decline, with about 25 percent declining below the pre-Wal-Mart level. This decline appears to be caused by a saturation of Wal-Mart stores and other competing stores. Two simple rules of thumb explain the winners and the losers among host town merchants.

Rule 1. Merchants selling goods or services different from what Wal-Mart sells become natural beneficiaries. In other words, since they are not competing directly, many of them benefit from the spillover of the extra customers being pulled into town by Wal-Mart.

Rule 2. Merchants selling the same goods as Wal-Mart are in jeopardy. In other words, they are subject to losing some trade to Wal-Mart unless they change their way of business.

Retail sales for <u>non-Wal-Mart</u> towns declined in all categories except food stores after the opening of Wal-Mart stores. The magnitude of the sales declines for non-Wal-Mart towns was found to be much greater in this study than it was in earlier studies. The probable reason for the larger decline in sales is that the density of Wal-Mart stores has increased substantially. In earlier studies, the few Wal-Mart stores were widely scattered and residents of the non-Wal-Mart towns were sometimes 50 or more miles from Wal-Mart towns, a disincentive for traveling to shop. At the time of this study, few non-Wal-Mart towns were more than 25 miles away from a Wal-Mart store, and apparently more people were traveling to the Wal-Mart towns to shop.

Smaller outlying towns (populations below 5,000) appear to have borne the brunt of all the new Wal-Mart stores and others. For example towns with populations between 500 and 1,000 lost nearly 47 percent of their sales from 1983 to 1993. The results of the 1993 study are discussed below.

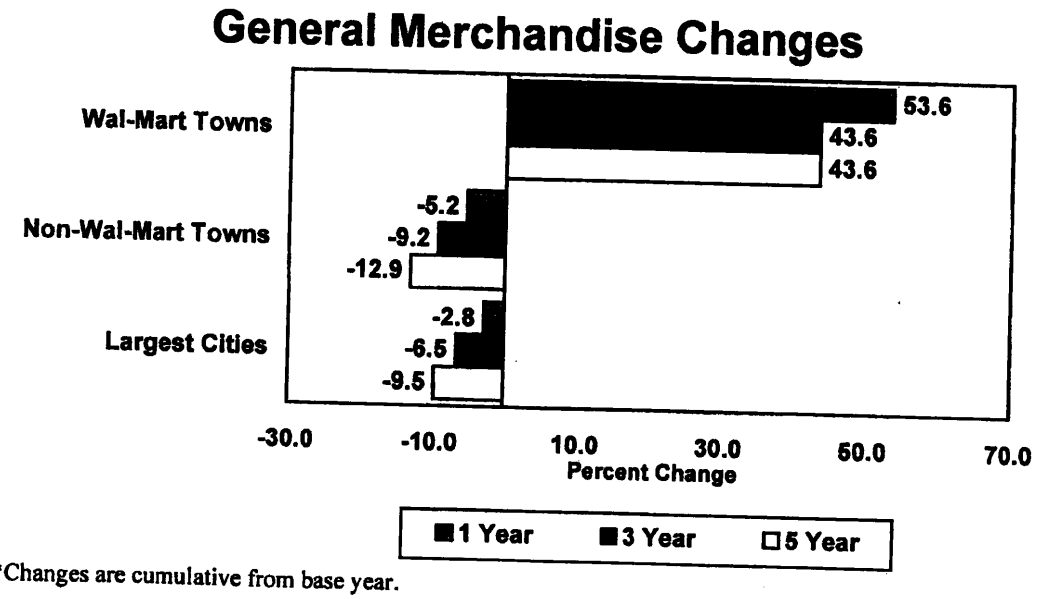
General Merchandise

General merchandise stores consist of department stores and variety stores and include discount general merchandise stores such as Wal-Mart, K Mart, and Target.

Wal-Mart Towns. Figure 1 shows that Wal-Mart towns experienced a huge increase in sales in the general merchandise category in the years following the opening of a Wal-Mart store. On average, the sales after the first year increased by 53.6 percent. Obviously, most of this increase in sales goes to the Wal-Mart store. It is interesting to note, however, that the large initial increase in sales is not maintained and sales increases over the base year drop from 53.6 percent the first year to 43.6 percent in years three and five, respectively. This is probably due to a curiosity factor the first year that brings in casual shoppers, as well as a steady saturation of general merchandise stores that dilutes the sales of all.

Non-Wal-Mart Towns. The non-Wal-Mart towns are towns between 5,000 and 30,000 population that do not have a Wal-Mart store. Typically they have a K Mart store or a regional discount store such as Pamida, Alco or Places.

Figure 1



*Changes are cumulative from base year.

As shown in Figure 1 general merchandise stores in non-Wal-Mart towns did not fare well after Wal-Mart stores came into the area. On average, sales declined by 5.2 percent after the first year and slipped to a 12.9 percent cumulative decrease after five years. It appears that the Wal-Mart stores captured sales from the general merchandise stores in the non-Wal-Mart towns.

Cities. In this study, cities were defined as municipalities with more than 50,000 population. In Iowa, there are eight cities over 50,000 population, with Des Moines being the largest at approximately 200,000 population. It was surprising to find that general merchandise sales declined in the cities after Wal-Mart stores came into the state, since they had been increasing up until that time. Figure 1 indicates a decline of 2.8 percent after one year, but that deteriorated to 9.5 percent cumulative decrease after five years. One explanation for the decrease of general merchandise sales in the cities is that as Wal-Mart stores increased in numbers, more and more local residents stayed at home to shop, rather than traveling to larger cities. Another possible explanation is that the category killer stores in the cities captured some of the sales that previously were made in the general merchandise stores.

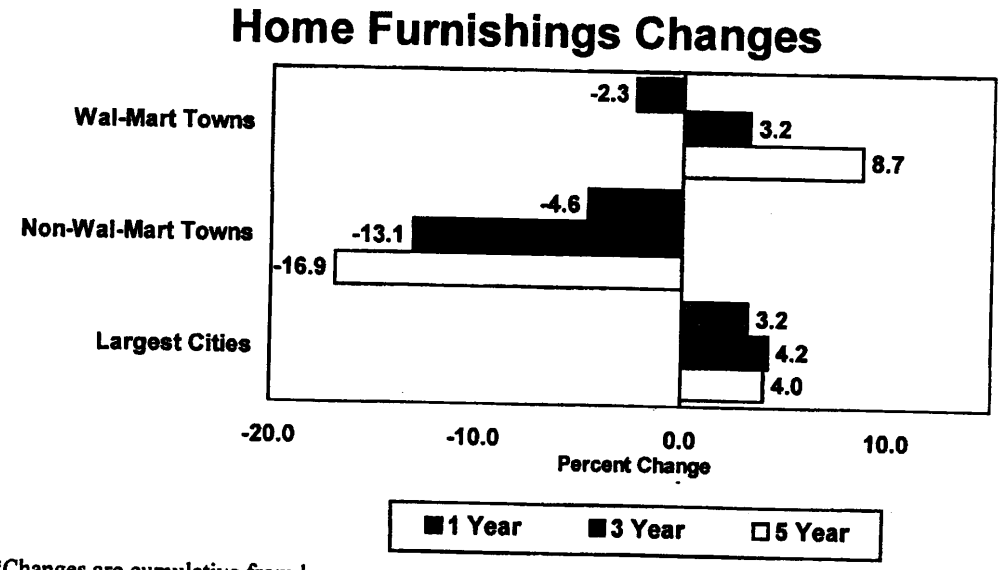
Home Furnishings

The home furnishings category is made up of furniture stores, major appliance stores, consumer electronics stores, floor covering stores and miscellaneous others such as drapery stores. Note that very little of this merchandise is sold in a Wal-Mart store.

Wal-Mart Towns. Home furnishings stores in Wal-Mart towns fared well after the opening of the Wal-Mart store. Figure 2 shows that after a first year setback of 2.3 percent, home furnishings sales increased by 3.2 percent over the base year after three years and enjoyed an 8.7 percent cumulative increase after five years. **Anecdotal evidence suggests that towns with good home furnishings stores experience an increase in this category because they benefit from the spillover of additional shoppers drawn to town by the Wal-Mart store.**

Non-Wal-Mart Towns. Home furnishings stores in towns without a Wal-Mart store suffered substantial reductions in sales in the years after Wal-Mart's opening. Figure 2 shows that sales declined by 4.6 percent after the first year, 13.1 percent after the three years and 16.9 percent after five years. **Apparently consumers are drawn from these towns to Wal-Mart towns and larger cities to shop and they choose to purchase some of their home furnishings in these towns also.**

Figure 2



*Changes are cumulative from base year.

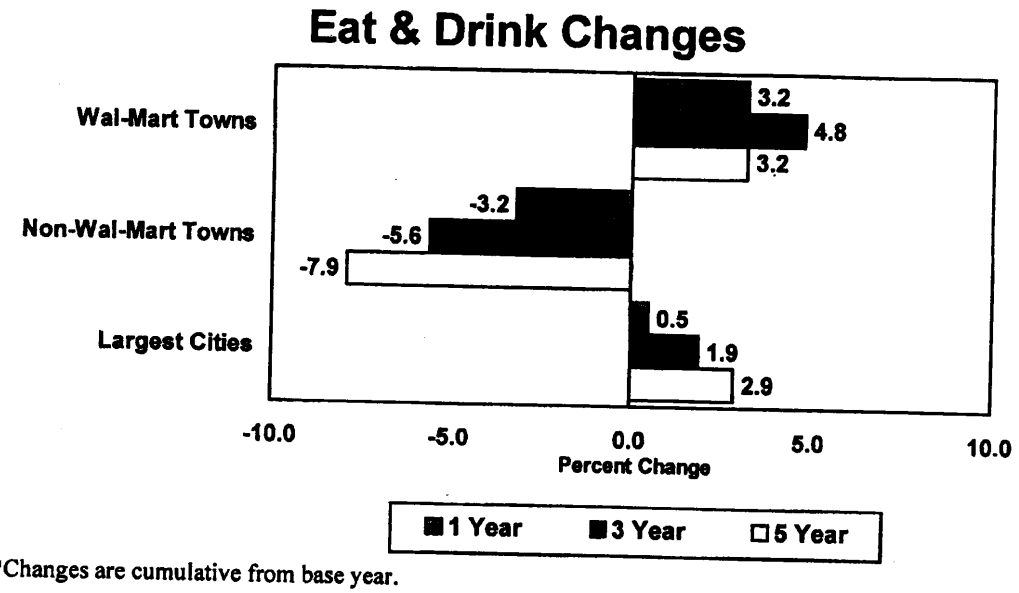
Cities. The eight cities in the study showed an average increase in home furnishings sales of 3.2 percent after one year of Wal-Mart stores. After three years sales were up 4.2 percent, but they declined slightly to 4.0 percent after five years. Although the percentages are relatively small, the dollar amounts are significant.

Eating and Drinking Places

Eating and drinking places obviously are restaurants and bars. Restaurants have been and continue to be a growth business because more and more people are eating away from home.

Wal-Mart Towns. Restaurant sales in Wal-Mart towns grew faster than the state average. Figure 3 shows that after one year, restaurant sales were up 3.2 percent, then climbed to a gain of 4.8 percent after three years, before declining to a 3.2 percent gain after five years. **Apparently the Wal-Mart stores were drawing more people into town to shop and before going home, some consumed meals at restaurants.**

Figure 3



*Changes are cumulative from base year.

Non-Wal-Mart Towns. Non-Wal-Mart towns experienced a decline in restaurant sales after Wal-Mart stores opened in the area. Figure 3 indicates that sales declined 3.2 percent after one year, 5.6 percent after three years and 7.9 percent after five years, in spite of the fact that restaurant sales were rising statewide. **Apparently residents of non-Wal-Mart towns were out-shopping in Wal-Mart towns and larger cities and consuming meals there instead of in their hometowns.**

Cities. The cities in the study showed a continual increase in eating and drinking sales. Figure 3 shows that they were up 0.5 percent after one year, up 1.9 percent after three years and up 2.9 percent after five years. **These figures would seem to reflect the normal growth pattern of sales in cities and were probably not affected one way or another by the opening of Wal-Mart stores around the state.**

Apparel Stores

Apparel stores consist of men's, women's and children's clothing stores as well as shoe stores. Miscellaneous apparel and accessory stores such as western wear would also be included in this category.

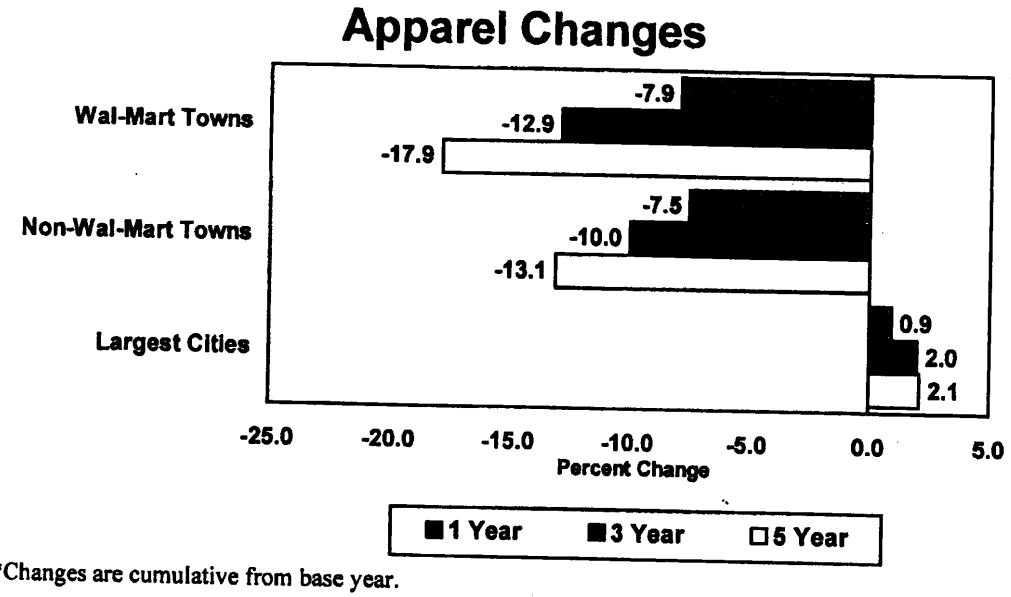
Wal-Mart Towns. Apparel store sales in the Wal-Mart towns declined by 7.9 percent after the first year of a Wal-Mart store, as shown in Figure 4. Sales were

down 12.9 percent after three years and declined further to 17.9 percent after five years. These are large losses and probably indicates that many of the local apparel stores were positioned at the low end of the market, thereby competing directly with the Wal-Mart apparel departments. **In a few towns where there was a good mix of upscale apparel stores, sales increases were enjoyed by apparel stores since they were not competing directly, but benefited from the additional traffic generated by the Wal-Mart store.**

Non-Wal-Mart Towns. As shown in Figure 4, apparel store sales in non-Wal-Mart towns showed a steady decline over the first five years. The losses were 7.5 percent after one year, 10 percent after three years and 13.1 percent after five years. **Again one would have to conclude that the loss of sales to the apparel stores was probably at the low end since that is primarily what discounters like Wal-Mart handle.**

Cities. Iowa cities showed gradual gains in apparel sales and appeared to be little affected by the growth of Wal-Mart stores. As shown in Figure 4, sales were up 0.9 percent after one year, and increased to 2.0 and 2.1 percent after three and five years, respectively.

Figure 4



*Changes are cumulative from base year.

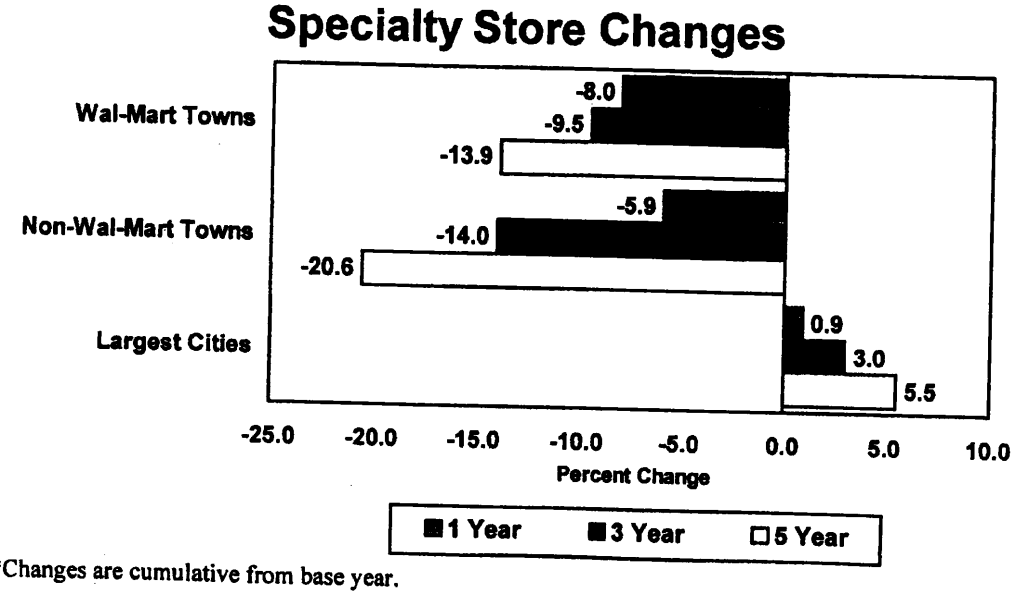
Specialty Stores

Specialty stores consist of drug stores, sporting goods, books and stationary stores, jewelry stores, gift and novelty shops and a few others. These stores were severely impacted in both the Wal-Mart towns and the non-Wal-Mart towns. This is because most of these stores sell the same merchandise that is being sold in a Wal-Mart store.

Wal-Mart Towns. Figure 5 shows an 8.0 percent decline in specialty store sales the first year after a Wal-Mart store opens. The cumulative decline was 9.5 percent after three years, but jumped to 13.9 percent after 5 years. Only a few towns escaped this decline in specialty store sales. These were towns such as Pella, a Dutch town, and Spirit Lake, a lake resort town that brought in a large number of tourists, who apparently patronized the specialty stores.

Non-Wal-Mart-Towns. The first year loss of sales in non-Wal-Mart town specialty stores was 5.9 percent, but widened to a 14.0 percent decline after three years and slipped to 20.6 percent decline after five years. During the five year interim, more and more Wal-Mart stores were opened and it appears that people in the non-Wal-Mart towns chose to shop in Wal-Mart towns since they could reach one with minimal travel.

Figure 5



*Changes are cumulative from base year.

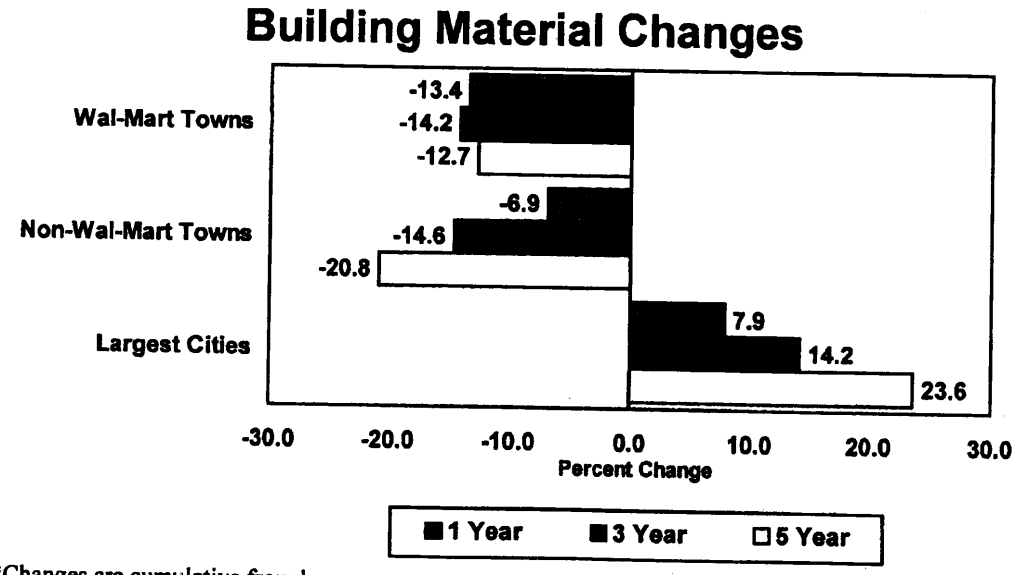
Cities. Specialty stores in Iowa cities continued to enjoy growth and apparently were little affected by the introduction of Wal-Mart stores. After one year, sales were up 0.9 percent and continued to increase by 3.0 percent after three years and by 5.5 percent after five years.

Building Materials Stores

Building materials stores consist of lumber yards, home improvement stores, hardware stores and paint/glass stores. These types of stores are being impacted by discount general merchandise stores to some extent, but the category killer home improvement stores such as Home Depot, Builder's Square and Lowe's, seem to be having a more severe impact on local smaller stores. Iowa does not yet have Home Depot, Builder's Square or Lowe's stores, but has some strong regional category killer stores such as Menard's and Payless Cashways.

Wal-Mart Towns. Figure 6 shows that sales of building material stores in the Wal-Mart towns dropped an average of 13.4 percent after the first year of a Wal-Mart store. The cumulative decline was 14.2 percent after three years, but recovered slightly to a 12.7 percent cumulative decline after five years.

Figure 6



*Changes are cumulative from base year.

Non-Wal-Mart Towns. As shown in Figure 6, building material stores in non-Wal-Mart towns experienced a 6.9 percent reduction in sales after one year of Wal-Mart stores, but the sales losses slipped to 14.6 percent after three years and further declined to a cumulative reduction of 20.8 percent after five years. **Anecdotal evidence suggests that people from non-Wal-Mart towns were switching the purchase of some items such as housewares, toys, sporting goods, etc. from local hardware stores to Wal-Mart stores and switching the purchase of lumber, tools and building supplies from the local lumber yards and hardware stores to the category killer stores in the cities.**

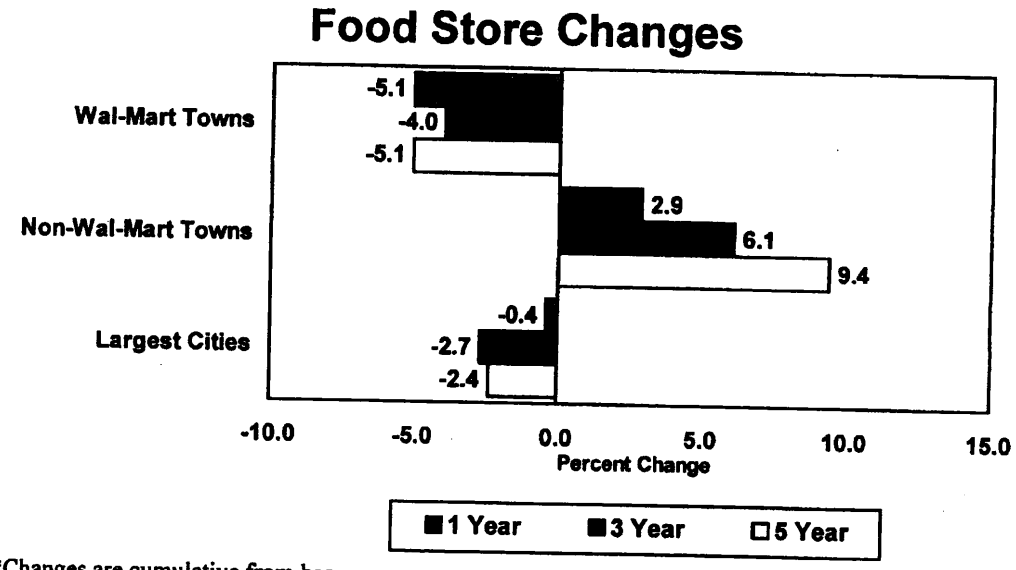
Cities. Figure 6 shows the very rapid growth of building material stores in the cities. Sales increased by 7.9 percent after one year, by 14.2 percent after three years and by 23.6 percent after five years. There can be little doubt that the category killer building materials stores are rapidly capturing a good share of the market.

Food Stores

Food Stores are primarily grocery stores or supermarkets. Structural changes have been happening in this segment of the market for some time. For example, in the last 15 years, Iowa has had a net loss of 845 grocery stores, a 43 percent reduction. Most of these losses have been from small towns of less than 1,000 population. When a small town loses its grocery store, town residents have no choice but to travel to a nearby larger town to shop for groceries. Therefore, towns of 5,000 population and above have typically shown an increase of grocery sales over this period.

Wal-Mart Towns. Wal-Mart towns experienced an average 5.1 percent decline in grocery store sales the first year after a Wal-Mart store opened, as shown in Figure 7. After three years, cumulative sales were down 4.0 percent, but after five years had slipped to 5.1 percent again. This is contrary to the trends for other towns of this size. **About 25 to 30 percent of the sales of a traditional supermarket are non-food items such as health and beauty aids, cleaning supplies, pet supplies, greeting cards and magazines and it appears that people in the Wal-Mart towns are switching the purchase of these items from the local grocery store to the Wal-Mart store. It also appears that people attracted to the Wal-Mart store from outlying areas do not spill over to shop at the grocery stores.**

Figure 7



*Changes are cumulative from base year.

Non-Wal-Mart Towns. Figure 7 shows that grocery stores in non-Wal-Mart towns enjoyed nice increases in sales. After one year sales were up 2.9 percent. The cumulative increases were 6.1 percent after three years and 9.4 percent after five years. This is what one would expect to happen, given the large loss of grocery stores in the smaller towns, but the Wal-Mart towns did not benefit like the non-Wal-Mart towns did. This finding also seems to indicate that people shop for groceries as close to home as possible.

Cities. As shown in Figure 7, food store sales decreased by 0.4 percent after one year of Wal-Mart stores, by 2.7 percent after three years and by 2.4 percent after five years. Food is the only category, besides general merchandise, that declined in the cities. This was probably caused by the membership warehouse clubs such as Sam's and Pace that captured some of this business. If in fact, people from the outlying areas were making less trips to the city after getting Wal-Mart stores in their area, this too could account for some of the reduction of city grocery sales.

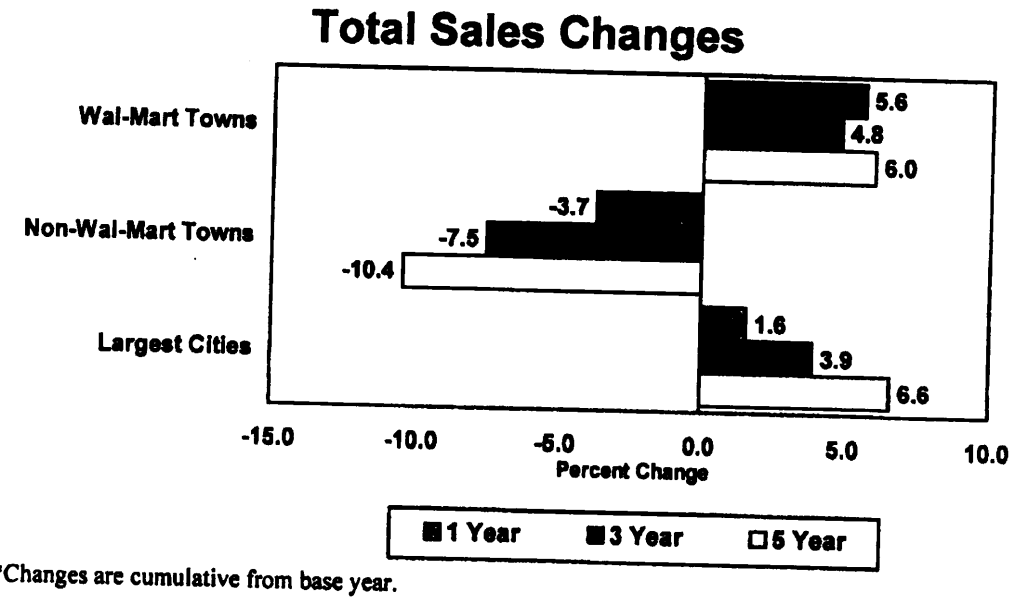
Total Retail Sales

Total retail sales includes the categories discussed above plus categories such as automotive, services and miscellaneous that were probably little affected by the introduction of Wal-Mart stores in the state.

Wal-Mart Towns. Figure 8 shows an increase in total sales, on average, for towns with Wal-Mart stores. Sales were up 5.6 percent after the first year, 4.8 percent after the third year and 6.0 percent after the fifth year. As will be seen later a big share of this gain accrued to the Wal-Mart stores.

Non-Wal-Mart Towns. As shown in Figure 8, the non-Wal-Mart towns did not fare very well as Wal-Mart stores opened across the state. Total sales were down 3.7 percent after one year, slipped further to a 7.5 percent decline after three years, and ended up down 10.4 percent after five years. As was earlier postulated, shoppers in non-Wal-Mart towns probably left their towns to shop in Wal-Mart towns more often as time went on since new Wal-Mart stores were established closer and closer to the non-Wal-Mart town.

Figure 8



*Changes are cumulative from base year.

Cities. Total sales in the cities continued to grow after the introduction of Wal-Mart stores. Figure 8 shows a 1.6 percent increase after one year, a 3.9 percent increase after three years and a 6.6 percent increase after five years.

Additional Effects on the Wal-Mart Town

The previous analysis determined the percent change in various merchandise groups. This section will examine the impact on the host town in terms of dollars and will look at longer-term effects.

Dollar Impact on Business in the Wal-Mart Town. Figure 9 shows the average change in dollar sales of merchandise categories in the Wal-Mart towns after three years. The average size town in the study was 15,141 population. On average, the following types of stores experienced losses of sales as shown, compared to the year before Wal-Mart opened.

Apparel stores	-$659,000
Building Materials stores	-$961,000
Food stores	-$1,356,000
Specialty stores	-$1,845,000
Miscellaneous stores	-$693,000

The following types of stores in the host town, on average, experienced gains of sales three years after the opening of a Wal-Mart store, as shown.

Home Furnishings stores	$223,000
Eating & Drinking firms	$663,000
General Merchandise stores	$11,474,000
Total sales	$8,230,000

Figure 9 did not account for Wal-Mart's share of these sales. Figure 10 nets out the sales to see how much was captured by the Wal-Mart store and what the net change was on the other local businesses after three years. To construct Figure 10, Wal-Mart's sales had to be taken into consideration. Wal-Mart, like most other companies will not release individual store sales, therefore an estimate was made. The Wal-Mart store sales estimate was made assuming an average store size of 70,000 square feet at an average of slightly less than $300 sales per square foot per year, thus arriving at estimated store sales of $20 million per year. The total sales increase of $8.23 million was rounded off to $8 million for this chart.

The interpretation of Figure 10 is that if the average Wal-Mart store in the study had annual sales of $20 million and the average increase in the host town's sales was $8 million per year, then there was a resulting reduction of sales of $12 million per year to existing merchants. Further analysis shows, however, that about 70 percent of the $12 million reduction was suffered by existing general merchandise stores. That means that smaller local merchants suffered average combined losses of $3.5 million of sales annually. These figures are averages; some towns fared better, some fared worse.

Figure 9

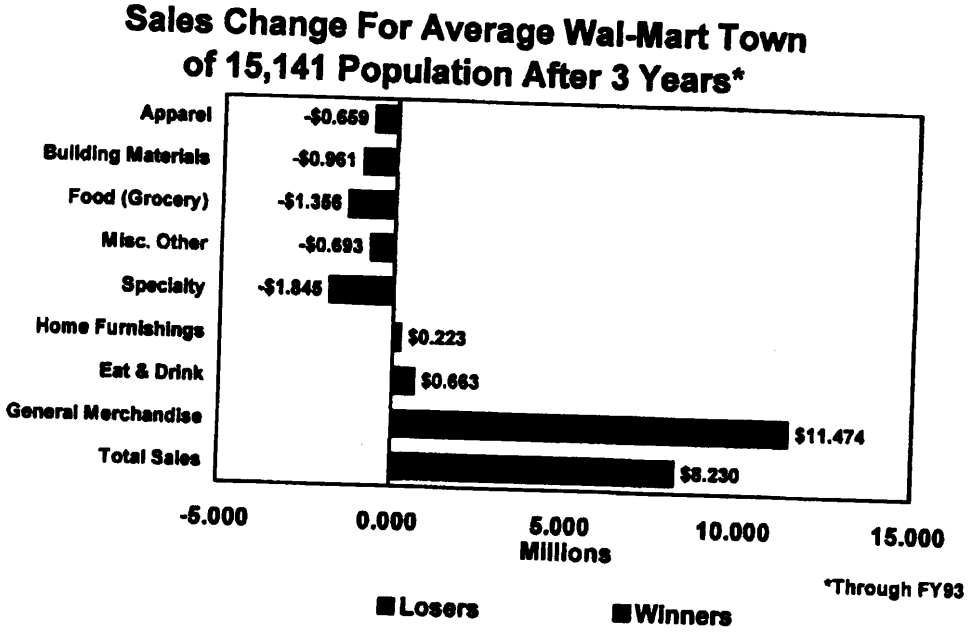


Figure 10

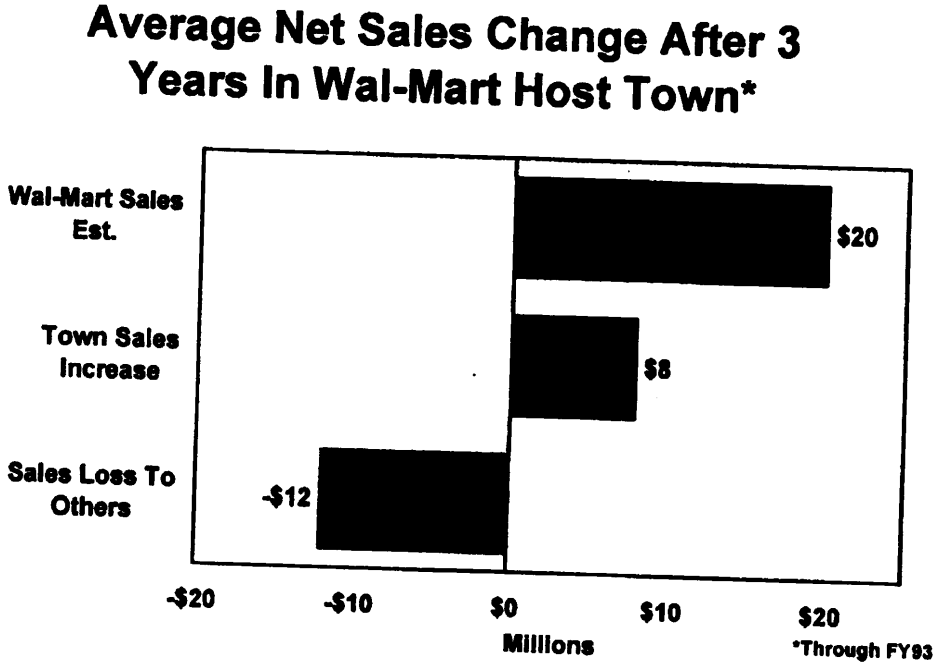


Figure 11a

Change in Sales for Independence, Iowa

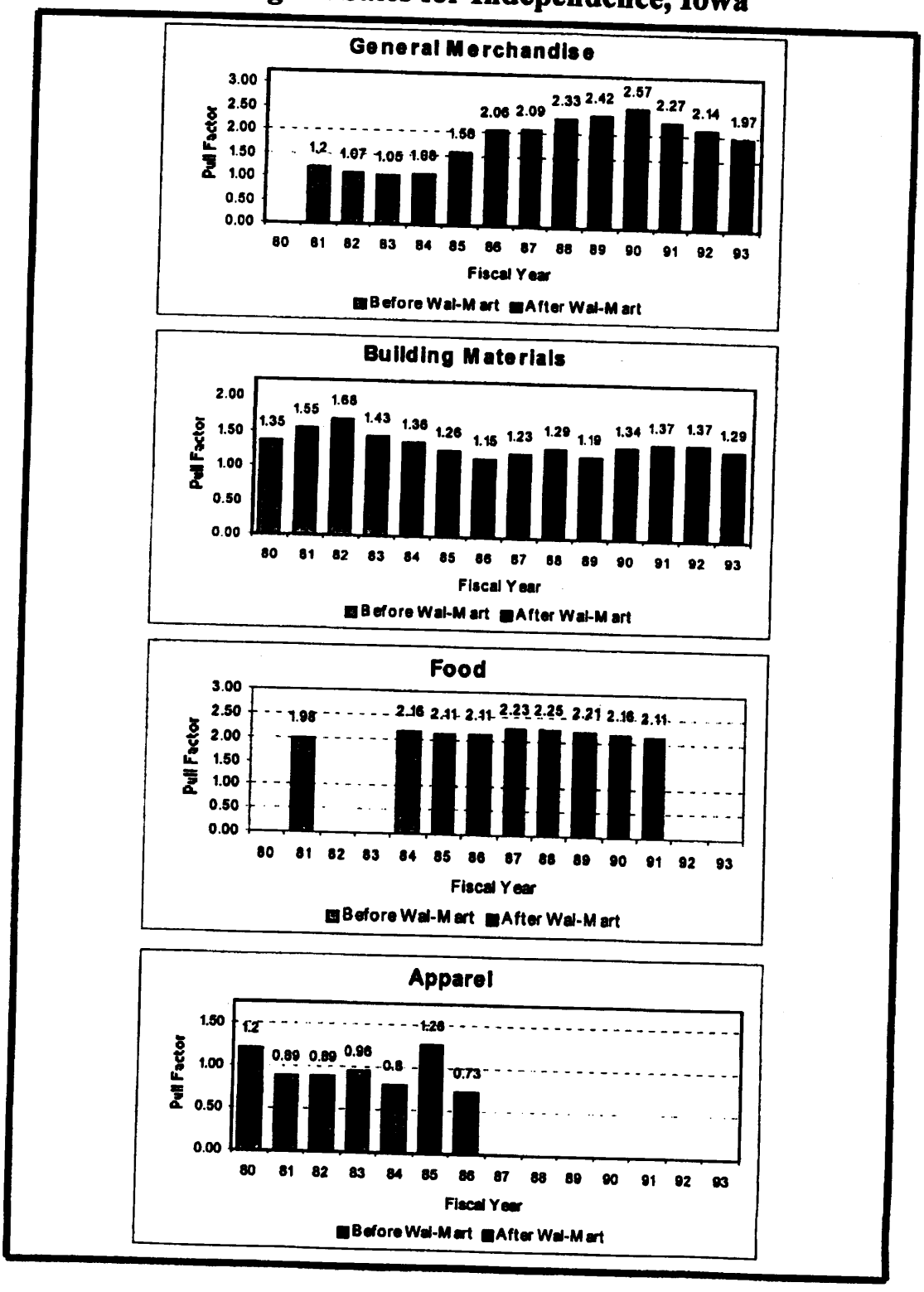
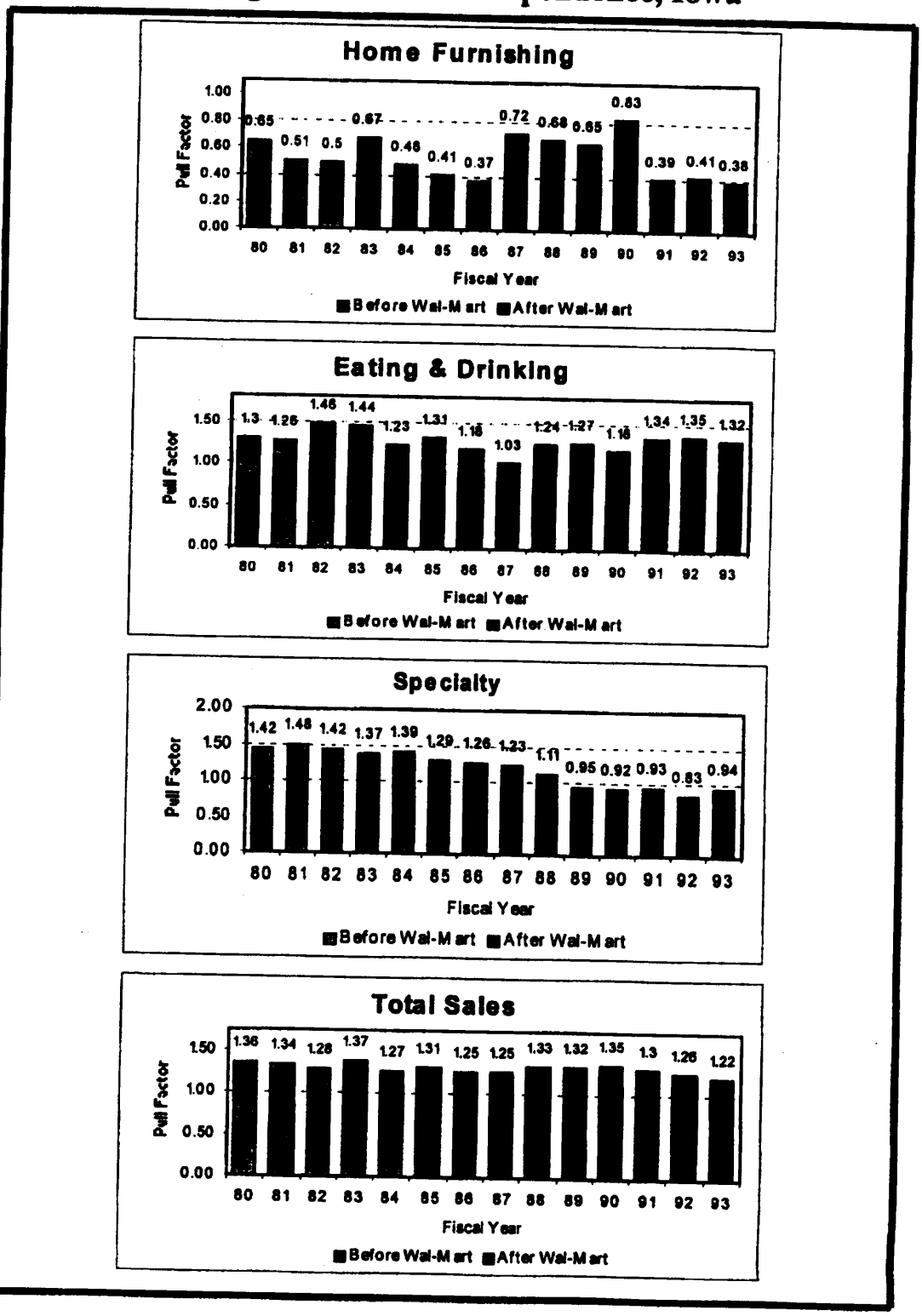


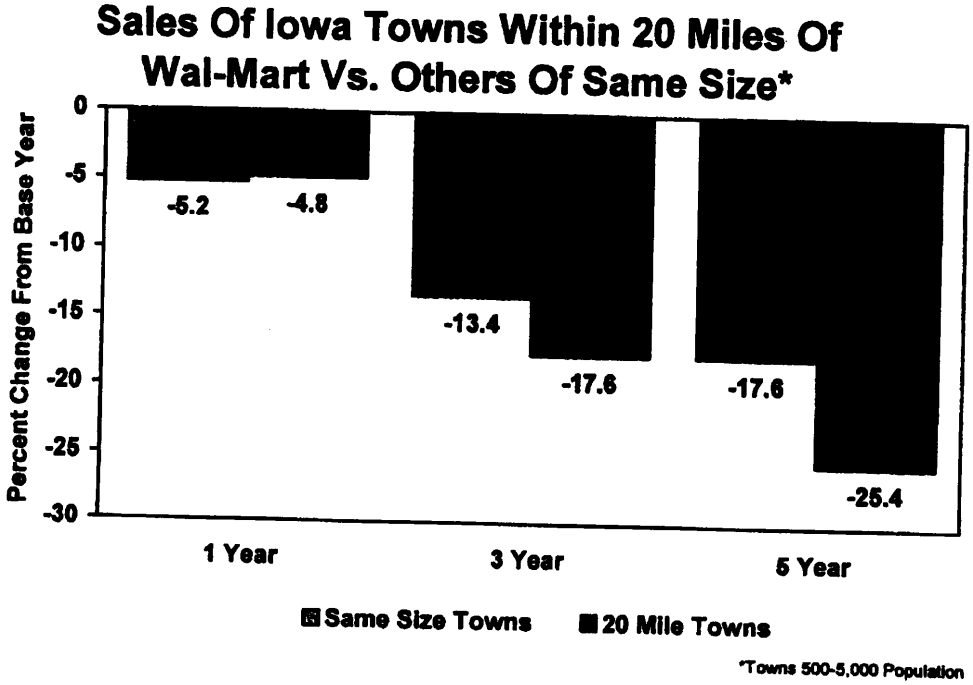
Figure 11b

Change in Sales for Independence, Iowa



The Saturation Effect. Nearly all of the 34 towns in this study showed an initial increase in pull factor (trade area size) in the first year after the Wal-Mart store opened. This is due to the curiosity factor (many people in the area checking out the new store) and to the capturing of trade from nearby smaller towns. This was particularly true in the early years when the few Wal-Mart stores were widely scattered and shoppers would travel long distances (50 or more miles) to patronize them. However, as time went on, the gaps between the stores were filled with more new Wal-Mart stores. This meant that many of the early stores that drew customers from long distances now might draw from only 12 to 15 miles as new stores were sometimes placed 20 to 25 miles from the old store. Eventually nine of the 34 towns ended up with smaller pull factors (smaller trade areas) as the saturation of stores became a fact. Figure 11 shows pull factor charts for Independence, Iowa, typical of the nine towns with shrinking trade areas. It can be seen that the 1993 pull factors were lower for all categories except general merchandise and eating and drinking than they were in 1984, the year before the opening of the Wal-Mart store. The chart for general merchandise clearly points out the year that new stores were built on either side of Independence. The general merchandise pull factor peaked at 2.57 in 1990 and then declined 23 percent to 1.97 in 1993, as sales were recaptured by the new Wal-Mart stores that opened in Manchester and Waterloo, approximately 25 miles east and west, respectively.

Figure 12



Impact on Smaller Towns

It seems fairly clear that smaller towns suffer the brunt of the discount mass merchandisers. To verify this premise, all small towns (less than 5,000 population) within a 20 mile radius of a Wal-Mart store were examined for sales changes. These changes were compared to all other small towns that were more than 20 miles from a Wal-Mart store. Figure 12 shows the change in sales for these towns. In the first year after a Wal-Mart store opening, both near and distant small towns had sales reductions of approximately five percent. After three years the small towns within 20 miles of Wal-Mart stores showed cumulative sales declines of 17.6 percent versus 13.4 percent for those further away. It appears that merchants in the nearby small towns may have continued to operate the first two years, but began closing their stores by the third year, thereby causing the greater decrease in sales than in the distant towns. After five years, sales in the 20 mile small towns had declined by 25.4 percent versus 17.6 percent for those further away. These are large losses for small towns, but are worse for the nearby towns.

Loss of Sales by Town Size. Table 1 shows the actual change in sales for small towns, delineated by population group, from 1983 to 1993. This data is taken from *Iowa Retail Sales and Use Tax Reports*. The total sales declines are divided by the average sales per business to determine the number of businesses lost. This number is an accurate portrayal of the actual businesses lost, but will not correlate with the number of businesses shown in the sales tax reports. This is because many of the original businesses lost were relatively large and their vacant space was often filled by very small businesses. For example a hardware store with sales of $400,000 per year may have quit business, but the resulting vacant space may have been filled with a hobby shop and beauty shop with combined sales of $40,000 per year.

Table 1. Change in Sales and Number of Businesses in Small towns, 1983-1993

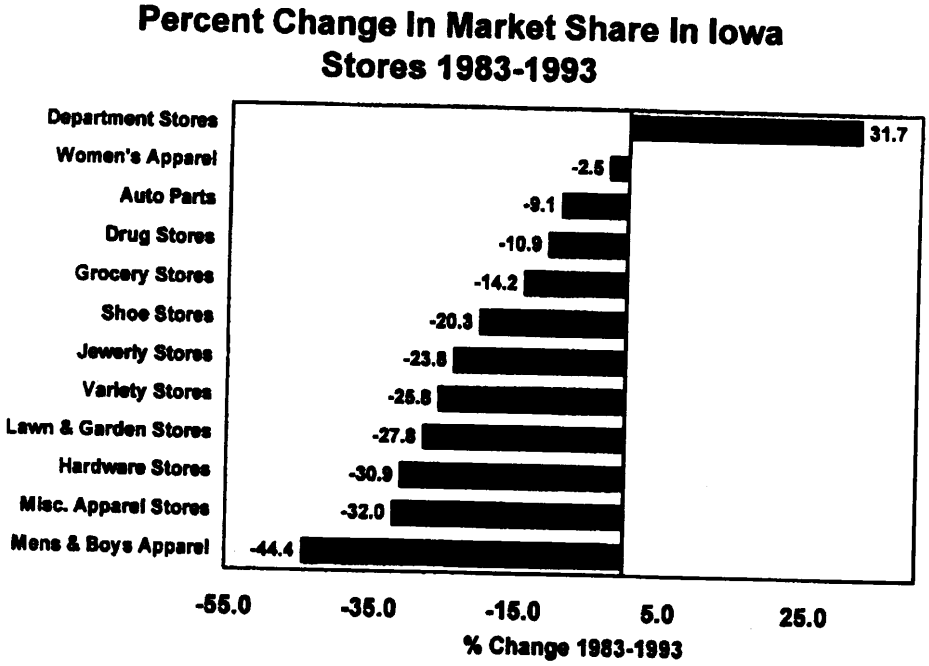
Population Group	% Change in Sales 1983-1993	$ Change in Sales 1983-1993	Total Number of Businesses Lost	Average Number of Businesses Lost per Town
5,000-2,500	-16.90%	($311,724,829)	1,068	20
2,500-1,000	-27.60%	($534,385,422)	1,832	12.5
1,000-500	-46.80%	($488,853,303)	1,679	9.3
<500	-39.30%	($244,926,652)	839	2.5
Rural	-43.40%	($556,651,481)	1,908	N/A
TOTAL		($2,136,541,687)	7,326	

Table 1 shows the percent sales loss varying from 16.9 percent for towns of 2,500-5,000 population to 46.8 percent for towns of 500-1,000 population. Rural businesses (those outside towns) had the largest dollar sales loss at $556,651,481

for the 1983-1993 period. The total sales for towns below 5,000 population plus those in rural areas was over $2.1 billion less in 1993 than they were in 1983. This indicates a huge shift of sales to larger towns and cities, with substantial amounts captured by mass merchandise stores.

The total number of businesses lost was derived by dividing the lost sales by the 1993 average sales per business in the state. The numbers varied from 839 for towns of less than 500 population to 1,908 for rural businesses. The estimated total number of businesses lost in small towns and rural areas is 7,326 from 1983 to 1993. By dividing the businesses lost by the number of towns, the average number of businesses lost per town was derived, and varied from 2.5 per towns of less than 500 population to 20 for towns of 2,500-5,000 population.

Figure 13



Changes in Consumer's Buying Habits

The State of Iowa lists statewide sales for stores by three-digit Standard Industrial Classification (SIC) code. In other words, the change in statewide sales is listed in more detail than the sales by town that are listed by two digit SIC code. Therefore, it was possible to determine the change in per capita expenditures in different types of stores in more detail than has been discussed heretofore. Figure

13 shows the present change in per capita sales from 1983 to 1993 for selected types of business. Department stores were the big winner, with a 31.7 percent increase. These increases undoubtedly accrued mainly to the discount department stores (primarily Wal-Mart), since they were in an expansionary mode during this period. Figure 14 shows that this increase in spending meant that Iowans spent over $425 million more in department stores in 1993 than they did in 1983.

At the other end of the scale, the average Iowan spent 44.4 percent less in men's and boy's apparel stores in 1993 than they did in 1983. As shown in Figure 14 this amounted to $47.8 million less sales and translated to a loss of nearly 43 percent of the stores going out of business during that period. As can be seen from Figures 13 and 14, several other types of businesses sustained heavy losses of sales from 1983 to 1993. The net loss of these types of stores for the State of Iowa during this period are shown in Table 2.

Table 2. Iowa Statewide Losses of Selected Retail Stores, 1983-1993

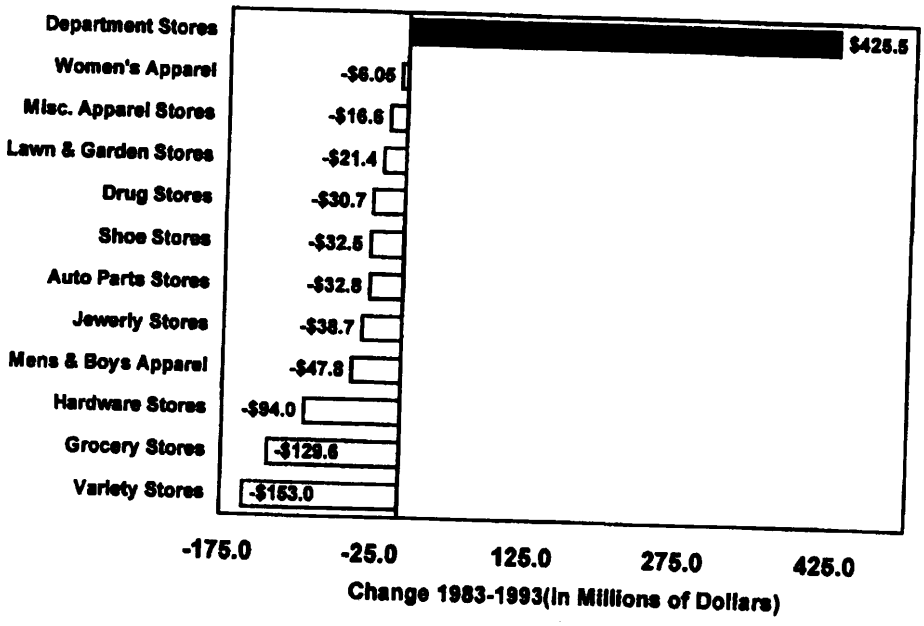
Type of Store	Number Lost	Percent Lost
Men's and Boy's Apparel	-111	-42.9%
Variety Stores	-161	-42.4%
Grocery Stores	-555	-33.6%
Hardware Stores	-298	-33.4%
Shoe Stores	-153	-29.5%
Department Stores	-88	-26.2%
Building Materials Stores	-293	-25.7%
Women's Apparel	-158	-18.5%
Lawn and Garden Stores	-94	-17.9%
Jewelry Stores	-111	-16.8%
Drug Stores	-116	-16.0%
Miscellaneous Apparel	-22	-6.1%
Auto Parts Stores	-29	-2.4%

Summary and Conclusions

When a discount general merchandise store opens in a smaller-to-medium size town with little population growth, there will be both positive and negative effects. The retail trade area size will expand. Businesses selling merchandise different from the discounter usually benefit from the increased traffic flow the first few years. Businesses selling the same merchandise as the discounter usually lose sales. Unfortunately, the discounters usually saturate the market with their stores which causes some towns' trade areas to shrink to a smaller size than before.

Figure 14

Dollar Change In Market Share In Iowa Stores 1983-1993



Towns of a similar size without a large mass merchandiser have suffered sales losses in nearly all categories except food, as residents either outshop to the nearby discount store or travel to the cities to shop at a category killer store.

The largest towns and cities continue to gain sales in all categories except general merchandise and groceries. It appears that discount mass merchandiser stores are holding customers in the local area to shop for general merchandise to a greater extent than before, thereby causing fewer shopping trips to the city.

The smallest towns suffer heavy losses in sales, ranging from 16 percent to over 46 percent over a 10 year period.

The shopping habits of customers fundamentally change after the introduction of discount mass merchandisers. They purchase more of their merchandise at the mass merchant and less at local merchants. The result is the loss of many stores across the state.

How Merchants Can Compete

Attitudes and Actions.

In general it is best to take a positive attitude toward the opening of a new mass merchandise store in your area. The following thoughts are offered in this regard.

- **In a free enterprise economy, all firms are free to compete.** However, local officials should be careful not to offer unduly generous incentives to large firms that could place smaller firms at a disadvantage.
- **Recognize that a discount mass merchandise store will probably enlarge your town's retail trade area size.** Try to figure out ways to capitalize on the increased volume of traffic to town.
- **It is possible to co-exist and even thrive in this type of environment.**
- **You may need to change your methods of operation as described below.**

Merchandise Tips.

The following suggestions are offered with regard to merchandise mix.

- **Try not to handle the exact merchandise.** For example, at least three of the largest mass merchandisers sell a particular brand of men's jeans for around $10. There are cases where smaller merchants sell the same brand jean for $15. Customers automatically detect that the smaller merchant is 50 percent higher priced and often assume that everything else in the store is 50 percent higher. A better strategy would be to sell another brand that is not directly comparable. Consider private label merchandise.
- **Sell Singles instead of Pre Packaged Groups.** Mass merchandisers often sell pre packaged merchandise that contain multiple items. Customers often need only one item. Independent merchants can often meet these needs by unbundling packages and selling items as singles. For example, a crafts store may gain new customers and make more profit by selling singles of various supplies such as templates, paint brushes, etc.
- **Try to handle complementary merchandise.** In many departments such as hardware, electrical, plumbing, lawn and garden and others, the mass merchandisers handle only fast moving merchandise. Astute competing merchants should expand their lines to be more complete than their giant competitors. Customers will soon learn to go directly to the more complete store if their needs are out of the ordinary. For example, a customer building a back yard storage shed requiring 15 pounds of nails and 100 bolts will be sadly disappointed if he or she

shops at a discount general merchandiser and finds only small pre-packaged assortments. Their needs will be much better met by a hardware store that has a wide assortment of these items in bulk quantities.

- **Look for voids in the mass merchandiser's inventory.** For example, Most discount general merchandisers do not handle the higher priced name brand athletic shoes desired by so many today. A smart competing sporting goods dealer would handle a full line of better athletic shoes.
- **Consider upscale merchandise.** Not all customers desire or demand lower priced merchandise. For example, there are cases of smaller children's wear stores which prosper in the shadow of a discount general merchandiser by catering to the tastes and preferences of middle-to-upper income clientele and to the "grandparent trade" where money is often not as much of a factor as it was when they were young parents.
- **Get rid of the "dogs".** Nearly all businesses end up with merchandise that does not sell and ends up cluttering the shelves. This is bad for at least two reasons, 1.) merchandise must turn to generate a profit, and 2.) old merchandise tarnishes the image of your store. Merchants should identify the "dogs" and clear them out by whatever means possible.
- **Buy Well.** From time to time, nearly all merchants have an opportunity to purchase merchandise at exceptional prices. If the merchandise is something they know they can sell, they should take advantage of the good buys. They can enhance their pricing image while making better profit margins. Store owners should also be on the lookout for opportunities to purchase cooperatively with other local merchants or through a larger buying cooperative.
- **Find a niche that you can fill.** Smaller merchants can often succeed by merely finding the various voids in the mass merchandisers' inventory and filling them as described above.

Marketing Tips.

There is always room for improving marketing practices. The following tips are offered to merchants regardless of their competition.

- **Know Your Customers.** It is important to know the demographics of your trade area in order to have the optimal merchandise mix. The breakdown of the population by income and age is available from census data kept on file at libraries and governmental agencies. However, computer marketing firms can quickly generate a detailed report, tailored to your specific trade area for a nominal fee. One such company is CACI Marketing Systems at (800) 292-CACI. In addition

you may want to conduct customer focus groups where diverse groups of customers under the direction of a third party discuss what they like and dislike about your business. These can be done by community colleges, other colleges and universities and private consultants.

- **Extended opening hours are a necessity!** Lifestyles have changed dramatically in the last generation. Now it is quite common for a household to have multiple wage earners working outside the household. Most of these people simply cannot get to local stores to shop if they stay open from 8:00 a.m. to 5:00 p.m. and by necessity they shop at mass merchandisers and shopping malls where the opening hours are more in tune with today's societal needs. Downtown merchants and other independent merchants can not seriously compete in this environment unless they cooperate and offer similar convenient opening hours.
- **Look for ways to improve your returns policies.** Most mass merchandisers have very liberal returns policies. Unfortunately, many smaller independent merchants cannot offer comparable policies because of their lack of leverage with major suppliers. In the long run they need to work through trade associations and buying groups to achieve comparable leverage with suppliers. In the short run and at all other times, they need to use common sense with regards to returns policies. For example, if a customer purchases a piece of lawn equipment in May and brings it back shortly thereafter complaining of a malfunction that required factory repair, the dealer would be well advised to give the customer a new replacement immediately or at least offer a loaner until the repaired item is returned. I know of a case such as this where, the customer was left empty handed until August when the repaired item finally came back from the factory. Needless to say, he was not happy.
- **Sharpen your pricing skills.** (E.g.; lower prices on items that people purchase frequently). It is my contention that many consumers do not know the "going price" of much of what they buy. They tend to know the price of the things they purchase frequently, or the things they have seen advertised recently. Discount mass merchandisers recognize this and tend to focus their lowest prices on these items. The average customer then assumes that prices on all other items must also be less. Conversely, many local merchants have gotten a "bad rap" on price image when they have not been careful in pricing some of the "hot items" and consequently, consumers then infer that everything else in the store is also high priced. Independent merchants need to carefully consider what items customers tend to know the price of and make special efforts to keep these prices competitive both through prominent displays and advertising.

- **Focus your Advertising.** Stress your competitive advantage. Every business must have one or more competitive advantages, in the eyes of the customer in order to succeed. For example, Sears established a huge competitive advantage when it adopted "Satisfaction Guaranteed", many years ago. With Wal-Mart, "Everyday Low Prices", is a strong competitive advantage. Large firms incorporate these competitive advantages into nearly every advertisement. Unfortunately, many smaller merchants do not get their full money's worth from their ads because they often fail to promote their competitive advantages. For example, a drug store with 24-hour prescription service and free delivery ought to incorporate those facts into every ad. Likewise, an apparel store that features special orders and in-store credit should stress those features in its ads. The point is that after awhile, customers will automatically know your competitive advantages and may patronize your store when the need arises.

Service Tips.

Superior service can become an important competitive advantage for many smaller businesses. Large chain stores usually don't have the flexibility to offer many of these services.

- **Emphasize expert technical advice.** It is difficult to find workers in discount mass merchandise stores who know the merchandise. There are many examples of smaller merchants who build a loyal clientele because they are able to help customers analyze their problems and help them find the tools, supplies and equipment needed to meet their needs.
- **Offer deliveries where appropriate.** A certain segment of our population has need for the delivery of certain items such as prescription drugs, and heavy or bulky items. Typically mass merchandisers cannot respond to these needs. Some smaller merchants can carve out a certain market share by offering delivery service.
- **Offer on-site repair or service of certain items.** Nearly everyone has a need to have some item repaired or serviced occasionally. Larger discount stores usually cannot readily provide this service. Independent merchants can draw a substantial volume of trade to their stores by providing repairs and service of merchandise.
- **Develop special order capability.** It is not possible for merchants to carry every conceivable item in inventory. However, they can make arrangements with certain suppliers or cooperating partner stores to priority ship needed items. Fax machines and express delivery services are making this feasible today. So rather than let a customer walk out the door when an item is not in inventory, it is better to say, "I'm sorry I do not have it in stock, but I can get it for you in two days."

- **Offer other services as appropriate.** Independent merchants can develop many loyal customers by offering "how to do it" classes, gift wrapping, rentals of certain items that will boost sales of collateral merchandise, etc.

Customer Relations Tips.

In past years, small businesses had the reputation of excellent customer relations. However, nowadays many consumers perceive that they are treated no better in small firms than in larger ones. Research has shown that poor customer relations is the primary reason that customers quit doing business with a store. The following suggestions are offered for all businesses.

- **Make sure customers are "greeted".** According to surveys in Iowa the primary thing that offends customers is the failure to be greeted or acknowledged when entering a store. This is particularly acute when the customer is in the buying mood. All store personnel should be trained to "greet" customers when they enter a store, determine their needs, and assist them.
- **Offer customers a smile instead of a frown.** All customers prefer to do business where they are treated in a friendly manner.
- **Make employees "associates".** Firms like Wal-Mart and J.C.Penny call their employees associates and treat them as part of a team. Independent merchants can emulate this. In particular, regular store meetings should be held where everyone is apprised of the latest happenings and plans and where all problems can be aired.
- **Solicit complaints.** Many times customers have a bad experience in a store, but they are reluctant to complain to store personnel for various reasons. Instead, they go around complaining to other people. Good merchants would rather hear of the complaint first so they can find a remedy. They can provide an environment where customers feel comfortable in complaining by soliciting complaints through ads, through signs at the checkout counters, by signs on shopping bags, etc.
- **Learn how to handle irate customers.** Dealing with irate customers is something few people enjoy, but is crucial to the success of the business. The worst thing store representatives can do is argue with or be rude to an irate customer. The following process with the acronym of LEAR is recommended. (L) Listen. It easy to become defensive and to turn off the customer while you are thinking of your response, but it pays to set everything aside and listen intently. (A) Ask questions to get all the facts on the table. (R) Resolve the situation to the satisfaction of the customer. Most merchants have found that by merely asking, "What do you see as a reasonable solution?" they can achieve a win-win solution.

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- **Train employees (often).** In the eyes of the customer, the employee is the business. Training employees can have one of the highest payoffs of any investment in the business. Training is available through Small Business Development Centers, university extension services, community colleges, parent companies, franchisers, and others. Also, there is a wide array of videotapes available today where training can be conducted in the store.

Continually Improve the Efficiency of Your Business.

Businesses may be doing all the right things as mentioned above, but unless they are efficiently operated, they are probably doomed to failure. Some of the top mass merchandisers such as Wal-Mart and Home depot continually strive to improve their operating efficiency.

- **Adopt modern technology.** Mass merchandisers have improved their efficiency dramatically by adopting new technology. Much of that technology is now available and affordable to smaller merchant. For example, powerful computers are available at ever decreasing prices. Software packages to handle nearly all store functions are also available. Computers reduce the need for people, improve accuracy and provide quick analysis of the business' performance. In addition, point of sale (POS) scanner equipment is also now available and affordable to all but the smallest businesses. In addition to scanning prices and speeding customers through the checkout line, they can revolutionize inventory control when tied in with the store computer and ultimately with supplier's computers.
- **Become familiar with your financial statements.** Many merchants do not like to deal with the finances of the business. If they can "farm" this operation out to a bookkeeper or accountant, they feel "out of sight, out of mind". Good merchants must become intimately familiar with the finances and operations of their businesses. They should constantly monitor gross profit margins, operating expenses, net profits and the various ratios important to the business.
- **Relentlessly find ways to reduce operating costs.** One of the reasons that the mass merchandisers can lower prices and still make a profit is that they continually reduce their operating costs. In addition to adopting technology, they find ways to save on utilities, insurance, transportation, etc. They are also always finding ways to reduce "shrinkage" by reducing shoplifting, pilferage and damage to merchandise. Smaller merchants can do the same thing.

[redacted]

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ABOUT THIS BULLETIN

In communities across the country, citizens are taking action to defend and strengthen their local economies. The Institute for Local Self-Reliance (ILSR) has been tracking these efforts and will use this bulletin to provide bimonthly updates on significant developments. We hope it will serve as a tool for making connections and sharing strategies within this growing movement. We encourage readers to share news and resources by sending email to smitchell@ilsr.org.

Many thanks to the foundations and individuals who've provided funding for the production of this bulletin, and to the Boulder Independent Business Alliance (http://www.boulder-iba.org) for funding the cost of our email publishing service and thereby keeping this bulletin ad-free.

ILSR is a nonprofit organization providing research, analysis, and innovative policy solutions for building healthy communities and strong local economies. This bulletin is part of ILSR's New Rules Project (http://www.newrules.org), which publishes a quarterly journal, The New Rules; several electronic bulletins on specific issues; and books, including The Home Town Advantage: How to Defend Your Main Street Against Chain Stores and Why It Matters. We also maintain a web-based clearinghouse of model public policies at http://www.newrules.org.

Another good source of news on local efforts to keep megastores at bay is the NewsFlash! section of the Sprawl-Busters web site (http://www.sprawl-busters.com). Additional links and organizations are listed at the end of each story.

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I. NATIONAL NEWS

NEWSPAPERS SUFFER WHEN LOCAL STORES CLOSE

Local newspapers suffer a double blow when giant chains like Home Depot or Wal-Mart come to town. Not only do these companies rarely advertise in local newspapers, but they usually force dozens of independent retailers to close, eliminating significant sources of newspaper ad revenue.

In a recent article in Editor & Publisher, Mark Fitzgerald describes the deadly impact that the rise of corporate chains and decline of locally owned businesses has had on local newspapers.

In Kirksville, a town of 17,500 in northern Missouri, the arrival of a Wal-Mart supercenter a few years ago put four clothing stores, four grocery stores, a stationery store, a fabric store, and a lawn-and-garden center out of business. The Kirksville Daily Express has struggled ever since.

Wal-Mart generally relies on direct mail and national television ads. Only occasionally does the company run newspaper ads or inserts. Wal-Mart's first generation of stores were bad enough for local newspapers, but its new supercenters are proving to be especially damaging. Supercenters are about twice the size of the earlier Wal-Mart stores and include a full-service supermarket. Wal-Mart's entry into the grocery business in the mid-1990s caused a wave of mergers among existing supermarket chains and forced many chain outlets as well as independents to close.

Newspapers rely heavily on revenue derived from supermarket inserts. "These are $20,000 to $60,000 accounts," notes Scott Champion, executive vice president of Liberty Group Publishing, which owns several small town newspapers. "How do you make that up? It's impossible."

Newspaper ad revenue from grocery stores fell 10 percent between 1995 and 2000, according to the trade magazine Presstime. The decline is expected to continue as Wal-Mart rolls out more supercenters and the sector further consolidates.

Consolidation in other sectors is also taking a toll. Home Depot usually heralds the death of eight or nine small-but-reliable accounts, John W. Kelly, advertising director of The News Tribune in Tacoma, Washington told Presstime. Home Depot does buy some advertising, he says, but those dollars "don't offset what you lose" when lumberyards and hardware stores close.

-- "Wal-Mart's Deadly Impact on Advertising" by Mark Fitzgerald in the May 27, 2002 issue of Editor & Publisher:
http://www.mediainfo.com/editorandpublisher/features_columns/features.jsp
-- "This Year's Retail," by Elise Burroughs in the March 2001 issue of Presstime:
http://www.naa.org/preview.cfm?AID=1820

BIG BOX SPRAWL CAUSES SHARP RISE IN POLICE COSTS

Many city officials welcome large chain retailers for the tax revenue that create. Rarely do they consider the other side of the balance sheet: the tax losses that occur when chains

displace local stores and the added costs of providing roads, sewers, police, fire, and other public services to the sprawling new development.

Added police costs are proving especially difficult for many communities that once welcomed big box stores. Take Port Richey, Florida, for example. This small town of about 14,000 people on the state's western coast was thrilled to attract a Wal-Mart supercenter last year. The store generates about $75,000 annually in tax revenue.

But be careful what you wish for. The town now says that new police costs associated with the store far exceed the new revenue. According to a report in the St. Petersburg Times, the supercenter generates a large number of police calls and accounts for one in four arrests. Many of these calls are for suspected shoplifting, which requires several hours of police time, during which there are no patrols of the streets. Non-emergency response times have risen dramatically. The number of traffic citations issued has been cut in half. Overtime hours have mushroomed. The department started the year with an overtime budget of $22,000, but has already spent $70,000.

Port Richey is not alone. In North Versailles, Pennsylvania, big box development caused the police force to grow from 10 to 26 officers over the past four years. In Tappahannock, Virginia, Police Chief James Barrett described a new Wal-Mart as "a strain on services."

Police departments are increasingly weighing in on proposals for new retail development. Earlier this year the Dallas Police Department issued a memo stating that a proposed Wal-Mart would dramatically increase the department's workload. In Greenland, New Hampshire, both the police and fire departments have cautioned city officials about the costs of a proposed shopping center.

II. ALLIANCES AND COOPERATIVES

"INDEPENDENTS WEEK" CELEBRATED IN TAMPA

Posters declaring "Celebrate Independents Week!" greeted customers of local stores in Tampa, Florida, during the week of July 4th. "As we celebrate our nation's independence, we invite you to join us in celebrating our great local independents," the posters read.

Independents Week was conceived by Carla Jimenez, co-owner of Inkwood Books. For several years, Inkwood has used Independence Day as an opportunity to remind customers of the importance of locally owned businesses to the community. "At the last minute this year, I decided to see if other local businesses wanted to get involved," explains Jimenez.

She called around and seventeen businesses agreed to sign-on. They included a record store, hardware dealer, several restaurants, a natural foods store, and a print shop. In addition to displaying the posters and talking to customers, each business held a drawing at the end of the week, where customers could win $60 in gift certificates for the other participating businesses.

They also sent out a press release. The Tampa Tribune responded with extensive coverage on the front page of the metro section. The local Fox affiliate decided to broadcast its morning news show from a different independent business every day that week.

"The key was that it was so simple. There were no meetings and very little time involved," says Jimenez, who has long wanted to organize the community's local retailers for joint promotional and educational events, but has never found the time. Based on comments from her own customers, she says, "It was definitely worth it."

The seventeen merchants plan to get together in August to discuss the response to Independents Week and perhaps plan another event for the fall. Jimenez hopes this will lay the foundation for further collaboration and a permanent association down the road.

COMMUNITY HERO CARD PROMOTES LOCAL BUSINESSES AND VOLUNTEERING

A new program in Minneapolis rewards residents for supporting locally owned businesses and volunteering at local nonprofits. Developed by CHC Data Inc., the new Community HeroCard enables residents to earn rebates by shopping at more than 40 local stores. The rebate doubles if the cardholder volunteers at a nonprofit organization.

The card looks like a credit card with a magnetic data strip that works in a standard debit card machine. Swiping the card accesses the customer's account and enables merchants to add and subtract rewards.

The card functions in part like a loyalty card program, similar to those offered by many national chains, but with the added advantage of allowing customers to spend rebates earned at one business at any of the participating stores. Each business decides how much of a rebate to provide. Rebates range from 5 to 20 percent, and average just over 10 percent.

In a typical transaction, a $50 purchase would generate a rebate of $5 from the merchant. CHC Data would collect $1 to fund the program and cover marketing costs. The cardholder would earn a $2 credit that could be spent at any of the participating stores. The remaining $2 would also be credited to the cardholder if s/he volunteers at a local nonprofit. If not, then the $2 is donated to the cardholder's chosen nonprofit.

The Community HeroCard grew out of a two-year pilot program started in 1997 and funded largely by foundation grants. The original paper-based system generated interest among local businesses, but was too cumbersome and time-consuming. CHC Data spent the next few years developing an electronic system compatible with standard debit card technology.

The first cards were issued in January. About 1,300 are currently in circulation. A full roll-out and extensive marketing campaign is planned for the fall. CHC Data hopes to have 40,000 cards circulating by the end of the year.

Part of the marketing effort will be undertaken by nonprofit organizations, which plan to sell the cards at fund-raisers. They will receive a portion of the $10 purchase price, plus the opportunity to earn rebate dollars and volunteer hours. About two dozen organizations are participating, including the Green Institute, Lyndale Neighborhood Association, Asian Media Access, and Hennepin County social service agencies.

Other components of the marketing effort include print and bus-stop advertisements, direct mail, and window and cash register decals displayed at local stores.

To participate, local businesses must buy a second debit card machine or upgrade to a machine capable of handling two channels at a cost of $250 to $575. Aside from this and the rebates themselves, there are no other costs.

One of the major benefits for local businesses is the ability to offer customers a sophisticated incentive card similar to cards offered by many chains, but normally too costly for a small business. Additional advantages include reaching customers of other local stores, being listed in all Community HeroCard advertisements, and, of course, contributing to a stronger community.

CHC Data plans to expand to other cities, with Atlanta, Boulder, and St. Louis currently topping the list of potential sites.

-- Community HeroCard: http://www.communityherocard.com

III. E-COMMERCE

IOWA RECONSIDERS LINK TO AMAZON ON STATE WEB SITE

The state of Iowa is in the process of removing a direct link to Amazon.com from the homepage of its official web site (http://www.iowa.gov). Under the new policy, visitors who click on the prominently placed graphic, "Looking for books about Iowa? Click Here Now,"

will be directed instead to a page with links to both Amazon.com and Booksense.com, an e-commerce site for independent bookstores.

The decision followed a letter sent by the owners of nine Iowa bookstores. "For the state government of Iowa to send business out of state is bad enough, but to then compound the problem by further draining state sales tax revenues is unconscionable," they wrote. Federal policy exempts out-of-state web and mail order firms from collecting state and local sales tax.

Iowa's director of digital government, Dan Combs, said that the state had also received a number of letters from concerned citizens. He said there had been no "detailed thought process" regarding the decision to link to Amazon.com. The state receives a percentage of any sales resulting from the link through Amazon.com's affiliate program.

Booksense.com offers a comparable affiliate program. Launched 18 months ago, Booksense.com was created by the American Booksellers Association, a trade group representing some 3,500 independent bookstores. The site offers more than two million titles. Purchases are credited to the customer's nearest participating bookstore, based on his or her zip code.

Currently 500 nonprofit organizations, businesses, and authors link to Booksense.com through its affiliate program. About five percent of the site's total sales are driven by these links.

-- To learn more about Booksense.com's affiliate program:
http://www.booksense.com/affiliate/more.jsp

IV. NEW RULES

OLD SAYBROOK, CONN. BANS SUPERSTORES

After more than four years of fighting to block three big box retailers, the town of Old Saybrook, Connecticut, has adopted an ordinance banning stores over 88,000 square feet. That's about the size of two football fields, but smaller than a typical Home Depot or Target store. The new law also restricts commercial buildings in some parts of town to no more than 25,000 square feet.

Although developers and members of the town's economic development committee characterized the ordinance as "anti-growth," zoning commission members cited traffic concerns, strong citizen opposition to additional large-scale development, and a need to protect the town's character and individuality. Over the last four years, the town has turned down Lowe's, Home Depot, and a Wal-Mart supercenter.

-- See the New Rules web site for examples of similar ordinances: http://www.newrules.org/retail/size.html

BIG BOX MORATORIUM ON BALLOT IN ELLSWORTH, MAINE

A grassroots group, Citizens Organized for Responsible Development (CORD), in Ellsworth, Maine, has gathered the 1,109 signatures needed to place a measure calling for a temporary moratorium on new retail development on the November ballot.

If it passes, the referendum will suspend construction of retail stores larger than 80,000 square feet on undeveloped land and commercial expansion of more than 40,000 square feet on developed land for a period of six months.

The purpose of the moratorium, according to CORD member Audie Tunney, is to give the city time to address large-scale retail development in its new comprehensive plan. Ellsworth began revising its comprehensive plan in 2000 and is expected to complete the process this year.

Ellsworth has a population of 6,500 and is located two hours northeast of Portland. Tens of thousands of visitors pass through the town each summer on their way to Acadia National Park.

CORD formed a few years ago in response to large-scale strip development rapidly overtaking part of the community. "There's a lot of land available along Route 1A, and nothing to preclude that land from becoming one strip mall after another," says Tunney.

Last year CORD fought a 208,000 square foot Wal-Mart supercenter. CORD encouraged residents to contact the Maine Department of Transportation regarding traffic impacts. MDOT subsequently required Wal-Mart to pay $4 million in mitigation fees for road improvements. The company chose to drop the project instead.

-- For more on development moratoria, see: http://www.newrules.org/retail/moratoria.html

V. LOCAL BATTLES

DALLAS REJECTS URBAN SUPERSTORE

With much fanfare and, it seemed, the expectation of much praise, Wal-Mart unveiled plans in April for an "urban" style supercenter in downtown Dallas. The 220,000-square-foot

supercenter would be situated on Mockingbird Lane in a residential neighborhood near Love Field. Unlike the standard suburban Wal-Mart, this one would feature a Spanish-style façade, landscaped gardens, underground parking, and a door that opened onto the sidewalk.

But residents protested that a nice paint job and a few trees couldn't make-up for the impacts of such a massive store. "You put red lipstick on a pig, it's still a pig," said Ronnie Holman, head of a coalition of neighborhood organizations that fought the development.

The coalition argued that the store, far from being "smart growth," was completely at odds with the small-scale nature of most urban retail. It would loom over the area and dwarf every building around it, Holman argued. It would lead to numerous small business failures and an estimated 11,000 to 18,000 additional vehicle trips each day.

In June, as several hundred residents packed city hall sporting red and green "No" stickers, the Dallas Plan Commission voted unanimously to reject Wal-Mart, calling it an "oversized guerrilla."

Wal-Mart had invested heavily in trying to gain approval for the store, which it hoped would provide a model for building urban supercenters throughout the country. The company contracted a media consultant, conducted an extensive direct-mail campaign to sway public opinion, and employed a former City Council member to present the proposal to officials.

Wal-Mart has said it will appeal to the Dallas City Council, where it will need to muster twelve of fifteen votes to override the Plan Commission's decision. The Council is not expected to take up the matter until late August.

NEW YORKERS FIGHT CHAIN INCURSION

"We have a strong sense of community here," says Krista Wergeland, a resident of Manhattan's Upper West Side and member of a neighborhood group working to block an incursion of fast-food restaurants and chain stores.

Long known for being unique and down-to-earth, the Upper West Side is increasingly popular with national retailers like Starbucks, the Gap, and Barnes & Noble. "You wake up and ask yourself: What's happening to the identity of this community?" said one resident. "This should be a neighborhood that meets local needs."

In less than two months, neighborhood activists have gathered more than 3,200 petition signatures against a plan by Tricon Global, which owns several fast-food chains, to open a Kentucky Fried Chicken on 106th and Broadway.

Tempted by Tricon Global's offer to pay double the going rent, the landlord has already kicked out Sambas Deli, a beloved family-owned business. Sambas was a bit shabby looking, says Wergeland, but it was a great store that focused on meeting the needs of nearby residents, unlike Tricon Global, which "doesn't care and doesn't have a sense of neighborhood."

The group is planning a large protest when KFC opens in about a month, which will be followed by continuous picketing and a boycott. Last year, a similar boycott of a new CVS, which replaced a local grocery store, succeeded after just six months when the chain cited substantial losses and closed the store.

Wergeland hopes KFC will likewise fold. She'd also like to see the group find a new location for Sambas, as residents did last year for Broadway Farm, a fruit and vegetable market evicted for a Victoria's Secret outlet.

-- Neighbors United Against KFC: http://www.digitalshiver.com/groundswell

HOOD RIVER RESIDENTS LINK "ARMS AROUND OUR TOWN"

More than 200 residents of Hood River, Oregon, linked arms to form a giant circle around their downtown one Friday afternoon in late May. Organized by the Hood River Citizens for Responsible Growth (CRG), the "Arms Around Our Town" event was designed to demonstrate community support for locally owned businesses, and to illustrate just how large a proposed Wal-Mart supercenter would be and how many local stores would be threatened.

"It was a great event," said Stuart Watson, CRG co-chair. "It really helped to remind people that this issue isn't dead." Earlier this year, both the town and county of Hood River enacted ordinances limiting new retail stores to no more than 50,000 square feet and establishing a special review process for commercial development between 25,000 and 50,000 square feet.

The county's new size limit does not apply to a proposed 185,000-square-foot Wal-Mart supercenter slated for land just outside the town limits, because the developer submitted an application for the project before the ordinance was adopted.

Nevertheless, the county should still reject the development based on its comprehensive plan, contends CRG. "Wal-Mart is directly at odds with several aspects of the plan," argues Watson. The plan stipulates that commercial activities should be centralized and strip development should be avoided. The plan states, "The unspoiled scenic beauty is the Columbia Gorges drawing card. Jeopardizing this for short term profit may likely have negative effects on the long-term economy of the area and its adjacent commercial centers."

"There are more than 3,000 Wal-Marts but there is only one Hood River," noted Al Norman of the national organization Sprawl-Busters in a debate with a Wal-Mart spokesperson held the Hood River Rotary Club. "Anyone who reads the comprehensive plan for the county will realize this is a bad fit, it just doesn't make sense."

CRG has organized a letter-writing campaign and produced two posters that focus on the supercenter's impact on quality of life and urge adherence to the comprehensive plan. A public hearing on the development is scheduled for July 31.

-- Hood River Citizens for Responsible Growth: http://www.hoodriversfuture.org
-- Sprawl-Busters: http://www.sprawl-busters.com

DENVER'S ASIAN BUSINESSES FORCE WAL-MART RETREAT

Strong protest from dozens of Asian small business owners has led Wal-Mart to drop plans for a giant supercenter in west Denver.

Wal-Mart had been working with the Denver Urban Renewal Authority (DURA) to condemn and bulldoze Alameda Square, a shopping center housing some 25 Vietnamese, Cambodian, Laotian and Chinese businesses, including the city's largest Asian grocery store. This spring, DURA declared the center "blighted," the first step in evicting the businesses and clearing the way for Wal-Mart. DURA also planned to provide Wal-Mart with $10 million in tax subsidies.

Alameda Square's small businesses, which have turned this once derelict shopping strip into a thriving community center, mobilized after learning of the plan in February. They hung signs in storefront windows urging residents to contact the city, circulated a petition that gathered more than 1,2000 signatures, and generated hundreds of letters to city officials and local newspapers.

"The message the city sends to them and to all small business owners in economically depressed areas is this: Don't risk your blood, sweat and tears on trying to turn around a struggling area, because once you make it a success, we will replace you with a national chain," wrote Douglas Hsiao.

Wal-Mart backed out in late June. City officials are now in talks with property owner Khanh Vu, who wants to upgrade the buildings while maintaining the center's existing merchants.

SMALL BUSINESSES FIGHT ABUSE OF EMINENT DOMAIN

Denver's Asian stores are not alone in facing condemnation for a national chain. In a growing number of court cases around the country, small business owners are challenging attempts by local and state governments to seize their property for chain store development.

Traditionally, eminent domain---the power of government to take private property for public use, provided that the owner receive market value---has been used for schools, roads, and other public infrastructure. In recent years, however, state and local governments have increasingly used eminent domain to seize homes or small businesses for chain retail development.

In Pemberton, Pennsylvania, for example, officials want to seize an obstetrician's office and a small clothing store to make way for a CVS pharmacy. In Wheeling, West Virginia, city officials plan to condemn several downtown buildings, oust the current businesses, and open dozens of outlet stores in the same buildings. In New York, the state redevelopment authority has moved to seize a 75-year-old Harlem woodworking shop to create room for Home Depot and Costco.

The government officials behind these projects claim that economic development is a "public use" that justifies seizing property.

"By that logic, anything goes," contends Scott Bullock, senior attorney for the Institute for Justice, a libertarian public interest law firm that is representing small businesses in several lawsuits challenging the constitutionality of condemning property for private development. "Any business will create more jobs and tax revenue than any home, and a large business will create more than a small business. So there's no end to it."

Bullock says the tide is beginning to shift; courts are increasingly siding with small businesses and setting limits on the use of eminent domain for private development.

In the New York case, Bill Minnich, owner of Minic Custom Woodwork, lost in a federal district court on a procedural issue but has appealed the decision. In California, a federal court concluded that the city of Lancaster's attempt to seize a 99 Cent Store for a Costco expansion was unconstitutional. The city has appealed. In Illinois, the state Supreme Court recently blocked a state agency's attempt to seize property for a race track expansion. That decision could derail another eminent domain action initiated by the same agency for a Home Depot development.

Similar cases have been brought in Connecticut, Michigan, Minnesota, and New Jersey.

-- See Institute for Justice at http://www.ij.org and the Castle Coalition at http://www.castlecoalition.org.

WAL-MART DECISION CHALLENGED IN NEW ORLEANS

Opponents of a massive Wal-Mart supercenter approved by the New Orleans City Council in April are fighting the so-called "done deal" on several fronts.

A coalition of organizations has filed two lawsuits challenging the decision. The plaintiffs include Smart Growth for Louisiana, the Coliseum Square Association, the Louisiana Landmarks Society, the Historic Magazine Row Association, and the Urban Conservancy.

One case in federal court charges that HUD's local agency, the Housing Authority of New Orleans, failed to comply with regulations governing the use of HOPE VI funds and violated the National Environmental Policy Act and the National Historic Preservation Act.

A second suit in state court charges that the City Council violated its own rules when it threw out 31 conditions for the project set by the City Planning Commission and replaced them with provisions favored by Wal-Mart without input from the public or the Planning Commission.

Meanwhile, opponents are organizing a letter-writing campaign to the State Bond Commission, which must approve the creation of a special Tax Increment Financing (TIF) district and issue $30 million in bonds for the construction of the store. The financing essentially amounts to a 38 percent reduction in Wal-Mart's property tax bill, a subsidy opponents say is unavailable to locally owned businesses and threatens the city's budget.

The Urban Conservancy has also requested that Congressman William Jefferson initiate a federal review of the project which is financed largely by HOPE VI funds.

-- For the sordid history of this development, see the May issue of this Bulletin at http://www.newrules.org/hta/hta0502.htm
-- For more on the recent developments, see the Urban Conservancy at http://www.ucno.org.

VI. ANTITRUST

AT BORDERS, MEGA-PUBLISHERS GET THE KEYS TO THE KINGDOM

Leading publishers will be involved in determining which books are carried at Borders Books stores under a new "category management" plan being phased in this year.

Under the plan, Borders is assigning each of 250 book categories---ranging from thrillers to romance novels---to one of the top publishers in that category. Borders will provide this "category captain" with detailed sales data for all titles in the category, including those of competitors. The publisher will analyze this data alongside its own research and prepare a plan outlining which titles should be stocked and how those books should be displayed and promoted.

Three categories have already been assigned. HarperCollins, a division of News Corp., will oversee the cooking and romance categories, while Random House, a unit of Bertelsmann, will be responsible for young children's books. Borders expects category captains to fork over about $110,000, plus incur a variety of expenses associated with fulfilling their duties.

Such a cozy relationship between large publishers and Borders, which controls about one-quarter of all bookstore sales in the U.S., could undermine competition and devastate small presses, contends Marilyn Ross, executive director of the Small Publishers Association of North America (SPAN). "Is anyone naive enough to believe these behemoths will make a genuine effort to include the works of the little guys?" she asks.

As criticism mounts, Borders CEO Greg Josefowicz has tried to play down the role of big publishers, noting that the "fundamental truth of category management is that customers drive the process." He insists that Borders will retain final say over which titles are stocked.

But experience in the supermarket industry, where category management first took root in the mid-1990s, suggests that, in practice, final say is rarely more than a rubber stamp. "In reality, the category captain has a vast advantage in information," notes Albert Foer, president of the American Antitrust Institute. "Even if the retailer occasionally turns down or modifies the category captain's proposal, the odds are that in general the category captain will prevail."

A Federal Trade Commission report released last year outlined several potential antitrust problems with category captains, but the agency has no plans for further research or action.

-- FTC report (see Part III): http://www.ftc.gov/os/2001/02/slottingallowancesreportfinal.pdf
-- SPAN: http://www.SPANnet.org
-- American Antitrust Institute: http://www.antitrustinstitute.org

MEXICO INVESTIGATES WAL-MART FOR ANTITRUST VIOLATIONS

In late May, Mexico's antitrust agency, the Federal Competition Commission, opened an investigation into Wal-Mart for "monopolistic practices." The action was prompted by charges that Wal-Mart has abused its market power by pressuring suppliers to sell goods

below cost or at prices substantially lower than those available to other retailers (even after accounting for reasonable volume discounts).

Wal-Mart is Mexico's largest retailer with 563 stores and $9.4 billion in annual revenue, three times the size of its nearest rival. Wal-Mart entered Mexico in 1997 when it purchased a controlling stake in Cifra SA, then the country's largest retailer.

No timetable for the investigation has been announced.

Wal-Mart has been formally accused of antitrust violations on several occasions. Last year, the Wisconsin Department of Agriculture, Trade, and Consumer Protection charged the company with predatory pricing at several of its stores in an attempt to put smaller competitors out of business. Wal-Mart reached an agreement with the agency, but admitted no wrongdoing. In 2000, German antitrust authorities charged Wal-Mart with similar predatory tactics. The company is currently appealing the charges through the German courts. A private antitrust lawsuit brought by a small grocery store chain in Oklahoma is still pending.

-- Comision Federal de Competencia (Federal Competition Commission): http://www.cfc.gob.mx
-- For more on the antitrust cases in Wisconsin, Germany, and Oklahoma, see the November 2000 and October 2001 issues of this bulletin at http://www.newrules.org/hta/index.htm.

VIDEO STORE LAWSUIT DISMISSED

A federal judge has dismissed all charges in the antitrust case brought by three independent video rental businesses against Blockbuster Video and several major Hollywood studios. The defendants were charged with price discrimination and conspiracy to prevent independent stores from gaining access to the same revenue-sharing deals available to Blockbuster.

In a move that surprised attorneys on both sides, the judge ruled that there was insufficient evidence of conspiracy and a link between discriminatory revenue-sharing deals and the demise of the independent stores.

Two studios, Warner Bros. and Metro-Goldwyn-Mayer Inc., had already reached a $15 million settlement with the plaintiffs.

Since the lawsuit was initiated three years ago, less expensive DVDs have displaced VHS and given independents access to more equitable pricing.

-- For more on the ruling see http://www.latimes.com/business/la-fi-blockbuster28jun28.story.
-- For more on revenue-sharing and background on the suit, see the November 2000 issue of this bulletin at http://www.newrules.org/hta/hta1100.htm.

VII. RESOURCES

DEVELOPMENT MORATORIA

The US Supreme Court's 6-3 decision in Tahoe-Sierra Preservation Council v. Tahoe Regional Planning Agency, finding that a temporary development moratorium enacted by a local government did not constitute a taking of property requiring compensation, has renewed interest in moratoria as planning tools. Several communities have used moratoria to suspend retail development while evaluating the impacts of superstores and revising local zoning rules accordingly. We've added information, links, and ordinance examples to the New Rules web site at http://www.newrules.org/retail/moratoria.html.

COMMUNITY & ENVIRONMENTAL DEFENSE SERVICES

Community & Environmental Defense Services (CEDS) works with citizens to defend their communities from bad development, including shopping centers, highways, landfills, mines, and golf courses. CEDS helps citizens identify and document the impacts of a proposed development and craft a strategy to block the project or mitigate its impacts. CEDS can assist with everything from attracting volunteers to raising funds and finding experts to testify. CEDS offers free advice and free publications. Many communities find that these free services are all they need; others hire the organization to carry out their campaigns.

-- Be sure to check out CEDS free publications, starting with "Preserving Neighborhoods and the Environment from Unsustainable Land Development Projects: A Citizen's Guide to Forming a Winning Strategy," at http://www.ceds.org/publications.html

BIG BOXES: UNWISE INVESTMENTS

PricewaterhouseCoopers and Lend Lease Real Estate Investments Inc. have released their annual guide for real estate investors. For several years, the guide has advised investors to shun big box retail. "Emerging Trends in Real Estate 2002" continues this advice. "America is overstored---too many formats cannibalize each other," the report notes. "Dead and dying malls litter the nation's suburbs. . . Most power centers [i.e., big box developments] are risky propositions. . . The only sure thing is that owners will be challenged to re-lease empty boxes

abandoned by the losers. . . It's just more of the same retailer merry-go-round: rob Peter to pay Paul."

For failing malls and shopping strips, there are "no exit strategies." The same might be said for communities that hitch their futures to absentee-owned sprawl. The report says traditional small-scale, mixed-use neighborhoods are the way to go: "[Investors] have come to realize that properties in better-planned, growth-constrained markets hold value better in downmarkets and appreciate more in upcycles. Areas with sensible zoning (integrating commercial, retail, and residential), parks, and street grids with sidewalks will age better than places oriented to disconnected cul-de-sac subdivisions and shopping strips, navigable only by car."

-- Emerging Trends in Real Estate 2002: http://www.lendleaserei.com.

CORPORATE CHAINS AT THE PUBLIC TROUGH

Despite evidence that chain stores harm local economies and destroy about as many jobs as they create, local and state officials continue to give these companies substantial tax breaks and subsidies. Although no one knows how much public funding the major retailers have received, these subsidies are widespread and have created an unlevel playing field for locally owned businesses which rarely receive any kind of tax break or subsidy. The following are just a few of many recent examples culled from the past two months:

* Austin officials are considering a $2.1 million tax break for a development anchored by Borders Books & Music. The development is just blocks from two of the city's biggest and best---and unsubsidized---independent retailers, Book People and Waterloo Records.
* Chicago plans to provide a $5.5 million tax subsidy for a development that includes a Borders Books and Music.
* Home Depot has applied for $300,000 in state tax breaks for a new superstore in Denham Springs, Louisiana.
* Palm Beach County, Florida, gave preliminary approval for $1.1 million tax break for Walgreens.
* Ohio provided $10 million in incentives for three new Wal-Mart facilities. The nonprofit Policy Matters Ohio has criticized the deals in a new report available on line at http://www.policymattersohio.org/walmartintro.htm.

ELSEWHERE IN THE MEDIA

Sales Tax Fairness:

-- "The Untaxables: Before Congress revisits the Internet-sales issue, states are developing a simpler and more uniform tax-collection process," an update on the Streamlined Sales Tax Project from the July 2002 issue of Governing: http://www.governing.com/7tax.htm.

Wal-Mart's Labor Practices:
-- "Suits Say Wal-Mart Forces Workers to Toil Off the Clock" by Steven Greenhouse, New York Times, June 25, 2002:
http://www.walmartwatch.com/info/internal.cfm?subsection_id=130&internal_id=364
-- "Union Blues at Wal-Mart" by John Dicker in the June 28, 2002 issue of The Nation:
http://www.alternet.org/story.html?StoryID=13490.
-- "How Wal-Mart is Remaking our World," by Jim Hightower, Hightower Lowdown, April 26, 2002: http://www.alternet.org/story.html?StoryID=12962

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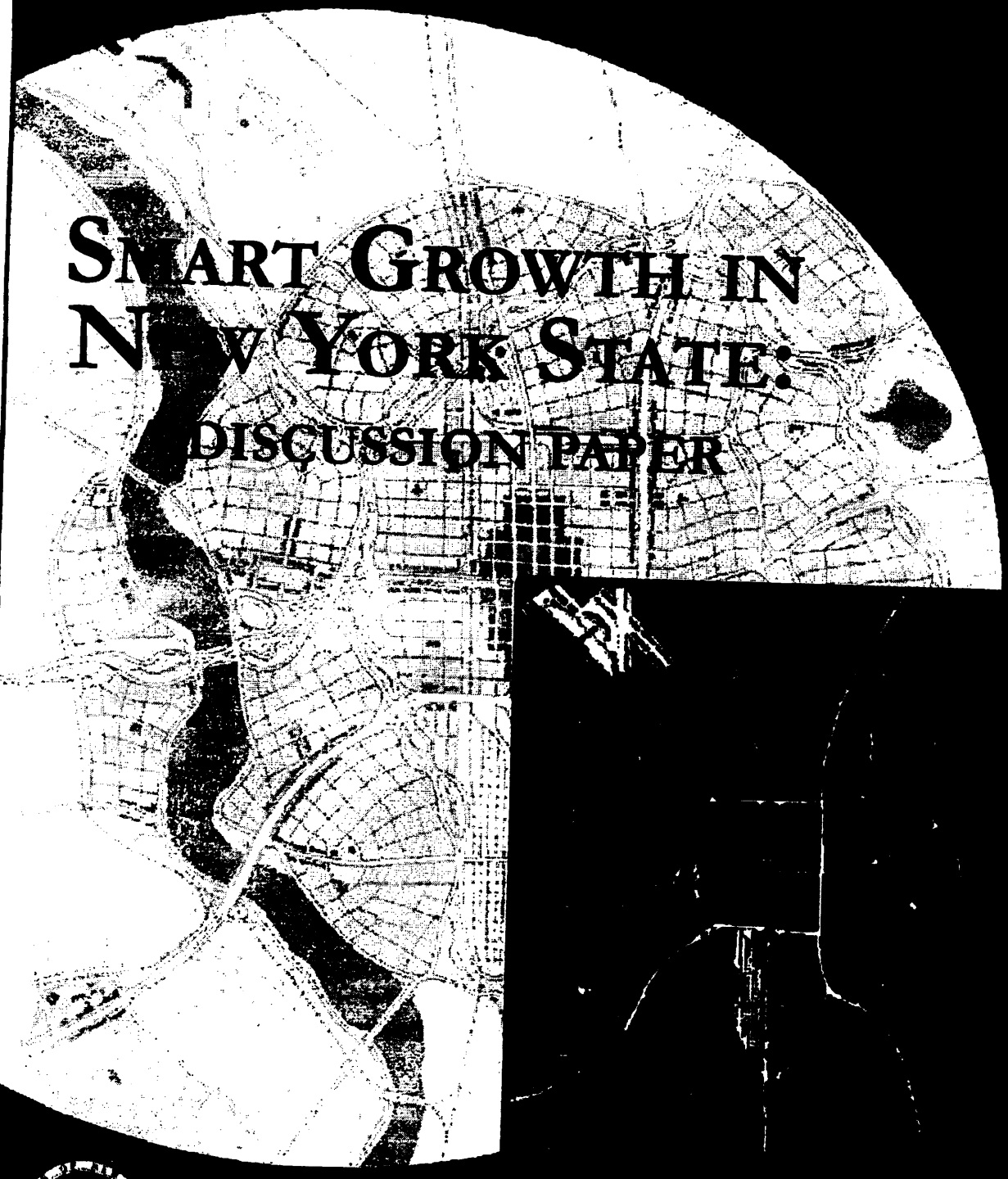

SMART GROWTH IN NEW YORK STATE: DISCUSSION PAPER

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Introduction

"Smart growth" is a frequently used term that is often defined in different ways by different people. It is hard to argue with the core idea of smart growth – that there are connections between development patterns and our quality of life, economy and environment, and that growth should improve rather than harm our communities. However, as a discussion progresses toward more specific definitions and policies, there can be many points of contention.

For example, many define smart growth as directing development to existing communities, while discouraging continuing development in outlying areas. Others would not support this goal, or would differ over how to implement it. Another common definition of smart growth is that it is more town-centered, more pedestrian- and transit-oriented, and provides a greater mix of housing, commercial and retail uses than current development patterns do. The smart growth movement, in other words, is premised on dissatisfaction with current development practices. Ironically, dissatisfaction is sometimes greatest in growing and economically successful areas.

This paper is intended to help stimulate a vigorous debate on smart growth in New York State by providing a general background and helping to define major issues. New York has a unique urban and natural heritage, and a rich diversity of communities, many of which need to be brought back to a healthy condition. These resources need to be conserved and developed wisely, in an economically sustainable and environmentally sound manner.

Most of our cities – the traditional population, business and cultural centers – are losing people and jobs, and serious fiscal, economic and social problems result. At the same time, many other communities are experiencing rapid and often unwanted growth and development. Much of this new development is low-density and occurs at the fringe of settled areas, consuming forest and farmland. A recent study on Upstate New York found that this pattern of sprawl is accelerating even as population growth slows, and that it is undermining the region's quality of life and economic health.

Because growth occurs across municipal borders, many smart growth principles involve regional planning and solutions. These solutions may be difficult to achieve given the fragmented structure of land use, transportation, and economic development planning, as well as the tendency for local governments to compete for relative advantage. In other states where reforms have been implemented, state governments have played a leading role in promoting change. While it is true that positive initiatives are taking place in many communities across New York State, there are also many problems. Without major changes in approach, development will continue in the current sprawling pattern.

To say that choices made today have ramifications extending far into the future is a platitude, but it is nonetheless true, and it is particularly true of land use and development decisions. Given current economic and fiscal challenges, the temptation is to view any development as positive, and some may think that smart growth is an issue New York State should focus on later. This thinking misses the point that smart growth *is* an economic and fiscal issue, as much as it is a quality of life and environmental issue.

Smart growth is an economic and fiscal issue, as much as it is a quality of life and environmental issue.

Local fiscal conditions are driven by local tax bases and service needs, both of which are heavily affected by the type of development that occurs. Development patterns drive the creation and maintenance of public infrastructure, and the efficiency of transportation and government services. Economic growth is dependent, among other things, on the availability of property for occupation or development, transportation systems, and local taxes. Business location decisions have also long been known to be influenced by quality of life, as well as the availability of a good workforce. Given these interrelationships, the question is not whether governments can afford to focus on smart growth – it is whether they can afford not to.

Many states, including some of our neighbors, have developed aggressive smart growth agendas. Certainly aspects of smart growth will differ from community to community, and few, if any, would suggest that there should be a standardized approach. That proposition, however, should not be used to argue against state-level action. In fact, it is generally held that state-level leadership and actions are needed to successfully counter current sprawling growth patterns, as well as to effectively address various other smart growth issues. To develop a successful approach here, New York State must address what smart growth is, as well as what it is not.

Sprawl and the Need to Guide Development

Two million square feet of retail space, 300 miles of new roads and hundreds of houses have been built in the newer suburbs of Monroe County in the past five years, even though the population has remained virtually unchanged. This has left Rochester and its older suburbs with two million square feet of vacant retail space and empty homes while Monroe County residents commute an extra 3,000 miles per family per year and pay higher taxes for the roads on which they commute.[1]

Over a period of 35 years, Clifton Park in Saratoga County has gone from a rural town to one where two-thirds of the land is covered by homes, schools, highways and shopping centers. Interstate Route 87 (the "Northway") is the major commuting route linking Clifton Park to Albany. Despite lane additions, the route is plagued by daily traffic jams and seemingly never-ending construction projects. This commute – which should be a 30-minute drive – often takes more than an hour. The growth in Clifton Park which has spurred a variety of responses from the Town, including a building moratorium and an open space plan is in stark contrast with the situation in the City of Albany, where a recent survey revealed 800 vacant buildings.

Monroe County and Clifton Park are not anomalies. This continuing dispersion of population and development – "sprawl" as it is termed – has become a national issue. All over the country there are suburban towns and rural communities experiencing rapid development at the same time the population in central cities and older inner-ring suburbs declines. Rapid and sometimes haphazard growth can create a number of problems in the places where it occurs, as does the loss of population and abandonment of properties in other areas. State and local taxes pay for new sewers and roads at the same time existing infrastructure is underutilized elsewhere, and fiscally depressed areas look to the State for assistance. Vacant residential, commercial and industrial properties are eyesores that have a variety of negative economic, fiscal, social and environmental impacts.

[1] City of Rochester website (http://www.cityofrochester.gov/mayor/sprawlrs/reality.htm); this data is from 1998, and the trends may have even accelerated since that time.

For cities – the historic population, business, educational and cultural centers – a spiral of decline can develop as population and businesses leave. This pattern often results in city governments without resources sufficient to support public infrastructure or the needs of remaining residents. However, some of the greatest concerns about sprawl exist among residents of growing suburban and rural communities, where continuing, poorly planned development can damage the quality of life.

In growing areas, sprawl causes transportation problems, environmental degradation, increasing local taxes for expanded services (particularly schools), and the loss of farmland, natural areas and other open space. These pressures are being felt particularly in rapidly growing areas like the Hudson Valley, where local governments and regional organizations are looking for ways to preserve quality of life and ease transportation difficulties while promoting economic prosperity.

A recent Brookings Institution study on Upstate New York found that sprawl – defined as the continuing urbanization of forest and farmland at the fringe of metropolitan areas – is accelerating even as population growth declines, and that it is undermining the economic health and quality of life in the region. According to the study, "Sprawl has been shown fairly consistently to degrade wildlife habitat, threaten agricultural productivity, and raise the cost of public services at all levels of government."[2] The study documents how Upstate land has been developed at 12 times the rate of population growth in the last two decades, and new housing units are being developed about twice as fast as new households are created. This occurs at the same time "brownfields" (environmentally compromised industrial/ commercial sites), "grayfields" (empty malls, failed office complexes and other unused or underutilized commercial properties), and vacant housing all proliferate in cities and older suburbs.

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Under various names, sprawl has long been considered a local fiscal issue. Among developing bedroom communities, for example, it is an axiom that new residential development does not generally pay its own way (meaning growth in the costs of services exceeds the growth in taxable property). There are countless examples of local communities seeking to stop new residential projects, fearing both an adverse fiscal impact and erosion in the quality of life.

Sprawl is also increasingly being discussed as an economic development concern. National leaders in business and government have acknowledged this issue, as have a number of governors. Local leaders are also increasingly making smart growth an explicit part of their agenda. For example, the Nassau County Executive has also made it an integral part of his economic development agenda, saying he wants to build a county-wide consensus on smart growth.[3]

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[2] "*Sprawl Without Growth: the Upstate Paradox*, Rolf Pendal, Brookings Institution Survey Series/Center on Urban and Metropolitan Policy (October 2003), p. 2

[3] See for example, Nassau County Executive Thomas R. Suozzi's 2003 State of the County address (available online at: http://www.co.nassau.ny.us/Exec/TSindex.html)

Big city mayors have long complained about both the fiscal and economic impacts of population and job losses associated with sprawl. The City of Buffalo, for example, raised smart growth in its four-year financial plan as a fundamental issue connected with the City's long-term financial viability, stating that "no plan to address [the City's] financial straits is complete until and unless it addresses how sprawl has contributed to [its] troubled financial condition."[4] Mayor Johnson of Rochester has become an outspoken advocate of smart growth policies and an equally outspoken critic of urban sprawl and the devastating effects of disinvestment on urban areas. He is also an ardent proponent of regionalism, promoting collaboration among municipalities within their regions to increase economic competitiveness.[5]

Defining Smart Growth

Like many other reform terms, there is no universally accepted definition of what "smart growth" is. However, an underlying concept in almost all definitions is that new development should be planned and beneficial rather than haphazard and damaging. While smart growth is usually associated with an anti-sprawl theme, the term is also used to describe any policies or approaches that help communities develop in ways they consider positive.

> ***[Smart Growth is]development that serves the economy, community, and the environment. It provides a framework for communities to make informed decisions about how and where they grow.***
>
> - International City/County Management Association (ICMA)

Various ideas advanced under the rubric of smart growth cover a wide spectrum, ranging from rehabilitation of city, town and village centers while strictly limiting peripheral growth – to supporting any growth where the value of more development is perceived to outweigh potential negative effects. In short, everyone is *for* smart growth, but it may be defined very differently depending on the perspective of the user.

The International City/County Management Association (ICMA) has offered a broad definition of smart growth, calling it "development that serves the economy, community, and the environment. It provides a framework for communities to make informed decisions about how and where they grow."[6] This definition provides room for many different interpretations and approaches.

A number of organizations have been formed to advance the smart growth agenda. One particularly influential group is the Smart Growth Network (SGN), which is a partnership of approximately 25 organizations (including the ICMA, which serves as the organizational "home" for the network). The network was organized in 1996, when the U.S. Environmental Protection Agency joined with several non-profit and government organizations in response to increasing community concerns about the need for new ways to grow that boost the economy, protect the environment, and enhance community vitality. The partner organizations include environmental groups, historic preservation organizations, professional organizations, developers, real estate interests, and government entities.

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[4] City of Buffalo Original Four-Year Financial Plan," p. 45 (available at http://www.bfsa.state.ny.us/Links.html)

[5] "Metropolitan Pressure Points," Mayor William A. Johnson, Jr. *Planning Commissioners Journal* (Number 32, Fall 1998)

[6] *Getting to Smart Growth: 100 Policies for Implementation* Smart Growth Network/ICMA (2003), p. i. ICMA is the professional and educational organization for chief appointed managers, administrators, and assistants in cities, towns, counties, and regional entities. Established in 1914, ICMA provides technical and management assistance, training, and information resources to its members and the local government community. More information is available on its website (icma.org).

The Smart Growth Network has promulgated ten principles for smart growth that help to define the term, at least from the perspective of its supporting organizations. According to the SGN principles, smart growth policies should:

- Strengthen and direct development toward existing communities,
- Preserve open space, farmland, natural beauty and critical environmental areas,
- Mix land uses (residential with retail and business),
- Take advantage of compact building design,
- Foster distinctive, attractive places with a strong sense of place,
- Create walkable neighborhoods,
- Provide a variety of transportation choices,
- Create a range of housing opportunities and choices,
- Encourage community and stakeholder collaboration, and
- Make development decisions predictable, fair and cost-effective.

The SGN principles are explained in great detail in a number of their publications and many examples of successful policies are provided.[7] A recent SGN publication stresses that successful approaches need to incorporate many of these principles and notes that many initiatives have been incorrectly characterized as smart growth in order to capitalize on the popularity of the term. Examples of this include directing growth away from certain areas without identifying parcels appropriate for development, high-density projects without a mix of uses, and large-scale revitalization without affordable housing.[8]

Thus, while the definition of smart growth may be somewhat in the eye of the beholder, it is generally acknowledged that there are a lot of problems to address, and that development continues to occur in ways that are not beneficial. The existence of the smart growth movement and the term itself imply that many development decisions have not been all that smart.

Smart growth is generally associated with various ways of preventing or mitigating the negative effects of sprawl, redirecting growth toward established communities and building more compact neighborhoods. While there is certainly debate on the issue, sprawl is often described as the direct result of long-standing public policies, including tax laws, highway subsidies, most zoning laws, and a system of dispersed local governments and planning. From this viewpoint, these systems are themselves the problem, and solutions require basic changes. Most zoning laws, for example, focus on minimum lot sizes, setback and parking requirements, all of which contribute to low-density development and sprawl.

Many of the seminal concepts behind smart growth were developed as part of a design movement known as "new urbanism." The group representing this perspective – the Congress for the New Urbanism (CNU) – was one of the original members of the SGN. Founded in 1993, CNU seeks to reform all aspects of real estate development, in part by altering the way regional and local plans and land use controls affect public and privately built infrastructure. CNU views disinvestment in central cities, the spread of placeless sprawl, increasing

[7] A complete description of the ten principles, as well as a wealth of other information on the orgranization and the reference materials it provides is available from the Smart Growth Network website (smartgrowth.org).

[8] Getting to Smart Growth II: 100 More Policies for Implementation, Smart Growth Network/ICMA (2003)

separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of America's built heritage as one interrelated community-building challenge.[9]

An organization created by architects and designers, CNU is concerned with building design as well as patterns of development, and it seeks to address the dissatisfaction many express with the current "built environment" – including streets, neighborhood layout, public spaces, and architectural design of public and private buildings. The group promotes the creation of walkable neighborhoods that contain a diverse, balanced range of housing and jobs, and supports strong regional planning for open space and appropriate architecture and planning.

In many ways, CNU is more specific than SGN in describing what sort of growth is consistent with new urbanist principles. For example, CNU does not support new projects that are gated, lack sidewalks, or have a tree-like street system, rather than a grid network. They believe that projects should connect well with surrounding neighborhoods, developments, or towns, while also protecting regional open space, and they rule out "single-use" projects that are just housing, just retail, or just office. Under CNU principles, various types of buildings should be seamlessly integrated, from different types of housing, to workplaces, to stores. Projects should have a neighborhood center within that is an easy and safe walk from all dwellings in the neighborhood. Buildings should be designed to make the street feel safe and inviting, by having front doors, porches, and windows facing the street – rather than having a streetscape of garage doors. Neighborhoods should include formal civic spaces and squares. Finally, CNU urges a "popsicle test" – meaning that an eight-year-old should be able to safely bike to a store to buy a popsicle.

Rather than approaching every new real estate development as a separate entity, CNU and others advocate planning neighborhoods and taking steps to ensure that new development is appropriately connected to the existing town layout, and meets certain standards. This is sometimes referred to as traditional neighborhood development, or TND. The "rules" include that a neighborhood should be laid out on a network (often a grid) that provides alternative routes to every destination. Streets within a neighborhood are to be suitably narrow and provide for parking, trees and sidewalks. There should be a mixture of large and small dwellings, outbuildings and shops and offices, all of which are compatible in size and disposition on their lots. Civic buildings for education, community meetings, religion and culture should serve as landmarks by being located at public squares and the termination of street vistas.

In essence, TND advocates a return to standards of neighborhood construction that preceded the almost complete reliance on automotive transportation that is now the rule in many suburban communities. In a TND neighborhood, walking is a viable alternative, and children and others can go about daily tasks without being dependent on automobile transportation.

[9] A complete description of this organization is available on its website (cnu.org), from which this extract *is drawn. Another useful source for understanding the concepts advanced by* the organization is *The New Urbanism: Toward an Architecture of Community*, by Peter Katz, Vencine Scully Jr. (McGraw-Hill, 1993)

It must be pointed out that in many ways current building codes, zoning ordinances and transportation standards conflict with this type of development. Minimum lot sizes and setbacks required by zoning laws are a prime example, as are prohibitions on mixing residential and commercial uses. Traffic engineers have also long focused on safety as being related to the width of roadways and the absence of trees or other objects with which vehicles can collide. However, there is growing evidence that wider roads in residential areas are actually less safe, because they encourage speeding. "Traffic calming" is a term referring to techniques that help slow traffic (such as narrower, treed streets with sidewalks) and situations that make for a more pedestrian-friendly environment (such as sharp angles, rather than rounded turns at four-way intersections).

A variety of books have been written on the concepts advanced by the new urbanists. One of the most popular is *Suburban Nation*[10] written by architects Andres Duany, Elizabeth Plater-Zyberk, and Jeff Speck. This book provides a compelling narrative, describing how current land use and building practices have produced sprawling residential subdivisions that are economically and environmentally unsustainable. The authors contend that such development patterns have destroyed the traditional concept of neighborhood, eroding safety, citizenship and other values. The impact of complete automobile dependence that is a consequence of the way developments have been built is described, including social isolation, the necessity of driving children to every event, bored teenagers, stranded elderly, and weary commuters. The once common pleasure of meeting neighbors on the street is much less likely when every outing requires a car trip (and the likelihood of running into people you know at a regional mall is much lower).

James Kunstler is another influential author who has written several books indicting current land use, transportation and building practices. Kunstler describes a "tragic landscape of highway strips, parking lots, housing tracts, mega-malls, junked cities, and ravaged countryside" that is "not simply an expression of our economic predicament, but in large part a cause."[11] While Kunstler's contentions are fervent, he is not alone in his thinking. His books have struck a chord among a large group of people who are looking for a more pleasant physical environment and a restored sense of community.

Smart Growth and Regionalism

Because sprawl occurs across metropolitan areas with many different local governments, smart growth is often associated with regionalism, or ways to foster cooperation around shared regional goals. Many of the major smart growth concepts, such as that growth should be directed to existing communities, involve regional planning and solutions. The fragmented structure of local land use regulation is a fundamental challenge to a true, regional smart growth agenda, as is the natural tendency for local governments to compete for relative advantage.

Most local governments rationally want to maximize their tax base and minimize their service needs, and these specific goals often supersede regional concerns. Many communities, for example, do not want high-density or affordable housing constructed within their borders, fearing that this type of growth will cost more in services

[10] *Surburban Nation: The Rise of Sprawl and the Decline of the American Dream*, Andres Duany, *et al*; North Point Press (April

[11] *The Geography of Nowhere*, James Howard Kunstler, Simon and Schuster (1993). See also, *Home from Nowhere* Simon and Schuster (1996).

than it will produce in tax revenues or detract from a perception of exclusivity. The question for an individual local government often is not whether there is an adequate supply of such housing available within the region – it is whether such development should take place within its borders. One of the primary results of urban flight and sprawl is the mismatch between need and fiscal capacity in cities and other core communities.

Regional solutions, however, are often as much about efficiency as equity. A 2001 report from a University at Buffalo professor, *Regionalism on Purpose*, describes mushrooming interest in regionalism to deal with border-crossing problems including sprawl, sluggish economies, uncoordinated land use policy, environmental decline, and intraregional inequities in housing, education and fiscal capacity. The report describes the history of regionalism, as well as the philosophical, political, and practical challenges, using case studies of the major efforts around the country. [12]

In a "home rule" state such as New York, with land use planning and control powers disbursed among more than 1600 municipalities, it can be very difficult to develop regional solutions to sprawl and other smart growth issues. The complex local government structure found in New York and other Northeastern states may have made sense at the time it was designed, when cities were the population centers, and the natural economic and social communities were generally encompassed within a single municipality. In today's environment, where the vast majority of people live and work within metropolitan areas encompassing many local governments, and where economic, fiscal, social, transportation and environmental issues all cross municipal borders, it is evident that regional solutions are needed for many problems.

While there are many examples of cooperation among local governments, there is also a tendency to compete, and it is important to understand the pressures facing local decision makers in considering the ways that regional smart growth goals can be achieved.

A recent book from two prominent New York State academics, *Regionalism and Realism*, examines the history of state and local governments in the tri-state region, analyzing various approaches to regionalism. Among the book's major conclusions is that acting regionally is almost always up to state (not local) governments. Only state governments, it is noted, can "control both the political and financial incentives and disincentives that can influence whether local jurisdictions collaborate or go it alone."[13]

Many smart growth principles cannot be implemented piecemeal in each municipality, and encouragement alone is simply not enough to promote systemic change. Successful smart growth initiatives often need at least a regional focus, and usually state-level changes are necessary in order to significantly alter current patterns of development. A subsequent section of this report discusses reforms taking place in other states.

Points of Contention

Smart growth has many proponents, but it also has its share of critics. Even among those who support smart growth as a concept, there are many differences in approach.

[12] *Regionalism on Purpose*, Kathryne A. Foster, Lincoln Institute of Land Policy (2001)
[13] *Regionalism and Realism*, Gerald Benjamin and Richard P. Nathan, A Century Foundation Book, Brookings Institution Press (2001), page 259.

A major criticism of smart growth is that it seeks to substitute a certain set of judgments for the natural products of free enterprise and local control, which ultimately reflect the choices of citizens with regard to where and how they live, work and travel. Another argument has been that smart growth proponents are unrealistic and that the policies they advocate and the type of development they wish to encourage are simply not possible on a large scale, given current economic and social realities, and the need to accommodate continuing population growth.

For example, a recent academic study concurs that sprawl is ubiquitous and continues to expand (in agreement with smart growth advocates). The authors conclude, however, that rather than being the result of government policies or poor planning, sprawl is the "inexorable product of car-based living [and] the primary social problem associated with sprawl is the fact that some people are left behind because they do not earn enough to afford the cars that this form of living requires."[14] Some argue that suburbanization is, in fact, an effective "congestion reduction mechanism" that shifts road and highway demand away from densely developed inner cities.[15]

It is inarguable that sprawl is a result of choices made by citizens in the automobile age. On the other hand, real estate development occurs under rules specified by three levels of governments, and development decisions can therefore hardly be said to occur in a free market. For example, subsidized highway construction and national energy policy are major causative factors in current "autocentric" development patterns.

It should be pointed out that choices made in a market situation show only what people prefer among the available alternatives. Real estate developers (i.e., the creators of the choices) are striving to maximize profits within an environment defined by government policies. Most land use controls prohibit high density development or mixed use at the same time that endless outward expansion is not only allowed, but subsidized by debt-funded highway projects and other public infrastructure. In this environment, sprawling growth will occur. In fact, under the zoning regulations found in most growing areas, it is all but impossible to build the compact traditional neighborhoods that were the accepted pattern for growth in the earlier part of the 20th Century.

Smart growth advocates point to the high market values of either well-preserved traditional neighborhoods or newly constructed communities following traditional neighborhood design principles as evidence that this type of development would be preferred by many – if only it could be built. From this standpoint, the struggle is not to change preferences, but to change the land use regulation and development system in ways that would allow such choices to be made available to consumers.

At least one survey by a market research firm has found that homebuyers are not satisfied with the type of development currently found in conventional suburbs, and would prefer the town model typical of pre-1950 development patterns (i.e., traditional neighborhood design). For example, by large majorities, consumers preferred a town center surrounded by a village green, shops and civic buildings, narrow streets in a grid pattern, and a less automobile-centered environment.[16]

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[14] Sprawl and Urban Growth, Edward L. Glaeser and Matthew E. Kahn (May 2003). NBER Working Paper No. W9733. (http://ssrn.com/abstract=412880)

[15] *Alternatives to Sprawl*, Lincoln Institute of Land Policy (1995); available online at: (http://www.lincolninst.edu/pubs/pub-detail.asp?id=864)

[16] *Why Smart Growth - A Primer*, International City/County Management Association, p. 25 (http://www.epa.gov/livability/pdf/WhySmartGrowth_bk.pdf)

Another fundamental conflict is whether regional choices should supersede local choices. There are many regional efforts consisting of cooperative, often voluntary efforts that many would argue are quite successful. It is also extremely difficult for any level of government or community to cede powers currently held. There are strong philosophical underpinnings to this issue. As described in *Regionalism on Purpose*, regionalism faces "the classic dilemma of a diverse and democratic society: how to realize the common good while safeguarding individual freedoms." In this context, "individual freedom" is that of individual municipalities being in control of their destinies (even if this limits the ability of the region as a whole to shape its destiny).

Academic studies, as well as public leaders, have often concluded that because of this conflict, as well as political and practical realities, that the most productive direction for the State to take on regionalism is to encourage regional cooperation, possibly through financial incentives.

Land Use Regulation

In New York State, virtually all land use *regulation* takes place at the municipal level (i.e., in a city, village or town government).[17] Land use *planning* is also primarily a municipal function. While State law provides for certain planning functions at the county or regional level, these mechanisms are largely advisory, whereas municipal planning is directly related to land use regulation.

The most common method of municipal land use control is to adopt "zoning" laws, which regulate the use of land by area or district, including the type of development that can occur (e.g. residential or commercial), as well as the density of such development (multifamily vs. single family, acres per building lot, etc.) and the siting requirements (building height, access, parking requirements, etc.).

Zoning is typically implemented through two components: a zoning map and zoning regulations. The map divides a municipality into various land use districts, such as residential, commercial, and industrial or manufacturing (or even more specific designations such as high-, medium-, and low-density residential, general commercial, highway commercial, light-industrial, heavy-industrial, etc.). Zoning regulations commonly describe the permissible land uses in the various zoning districts on the map and also include dimensional standards for each district, such as building heights, minimum lot sizes and distances (setbacks) from buildings to property lines and/or the street, as well as the steps necessary for approval of certain types of use. For example, a single family home may be permitted "as-of-right" in a low-density residential zoning district, meaning no further approvals are needed as long as the basic requirements are met (other than a building or zoning permit). For other types of properties (usually larger and more complex, such as shopping centers, office or apartment complexes), or subdivisions (plans to subdivide and develop larger parcels of land), additional procedures and reviews are typically required.

[17] The State Constitution (Article IX, Section 2) as well as various enabling statutes, gives individual city, town and village governments the power to control land use, including the power to decide whether to control use and to determine the nature of the controls. While a comprehensive examination of land use regulation is beyond the scope of this report, an excellent description, including the legal basis for these powers, can be obtained in the *Local Government Handbook (5th Edition)*, published by the NYS Department of State (January 2000) and available online (www.dos.state.ny.us/lgss/pdfs/Handbook.pdf).

Local governments are empowered to create planning boards, to which planning and regulatory matters can be referred prior to action by municipal legislative bodies. For example, planning boards often play an important advisory role in preparing and amending comprehensive plans, zoning regulations and long-range capital programs. Certain regulatory functions such as subdivision approval and site plan review (e.g., of the layout and design of a shopping center, apartment complex, or office building) can also be delegated to planning boards.

State law provides for municipalities to prepare and amend a comprehensive plan, which generally forms the foundation for land use controls. Since each municipality chooses its own approach to land use regulation, the form of each plan will be unique. Some plans consist of only a few pages, while others are thick volumes with heavily detailed maps and illustrations. Professional planning firms are often used to help carry out this function.

Comprehensive planning is not required, but has been broadly promoted by State government as an invaluable tool for communities because it can provide a basis for all local efforts to guide development of the built environment, as well as preservation of natural areas and open space. This includes land use controls where they are imposed, but also public investments in roadways, sidewalks, sewer and water systems, parks and other amenities. Public participation is an important component of the planning process, and can occur formally through hearings and informally through workshops and informational sessions. Comprehensive planning is a very good way to review a community's land use strategy in a smart growth context. Many communities do not have comprehensive plans (about 40 percent, according to a 1999 study[18]); among those that do have plans, most were prepared decades ago and are severely out of date.

There are other laws and tools that can be used to regulate and influence development, including building codes, architectural design control, historic preservation, environmental review, open space preservation, agricultural protection, and sign control.

Within the context of a zoning law, there are also a variety of alternative techniques available (i.e., other than dividing a community into various use districts via a map). These include the following:

- Cluster zoning – a variation of traditional subdivision approval that allows higher density construction within a portion of a property being subdivided.
- Incentive or bonus zoning – allows developers to exceed dimensional, density or other limitations of zoning regulations in exchange for providing various amenities such as a park or plaza.
- Planned unit development (PUD) – a zoning technique that provides for development of a large tract of land as a "unit" that allows mixed use and density within a single area).
- Floating Zones – an approach that allows definition of a zone that is not mapped, but "floats" in the abstract until a large scale development proposal is made (PUD is often a form of floating zone).

[18] *Land Use Planning and Regulations in New York State Municipalities: A Survey*, NYS Legislative Commission on Rural Resources (1999). According to this report, 84 percent of cities; 58 percent of towns and villages; and 59 percent of all municipalities have written comprehensive plans.

- Performance zoning – this form of regulation establishes performance standards, usually in terms of impact on the community such as traffic, noise, scenic and visual quality impacts.

Transfer of development rights is another innovative technique that can be used to help preserve areas in which development should be avoided, such as agricultural land or water supply protection areas. Under this approach, the right to develop properties in a protected area is exchanged for the ability to develop land in a target area more intensively than the law would otherwise allow. Sale of development rights is another option. For example, an agreement between the State and the International Paper Company to preserve nearly 260,000 acres in the Adirondack Park through working forest conservation easements was recently announced.[19]

A moratorium on development can be used to temporarily halt new land development projects while a municipality's comprehensive plan, land use regulations or both are revised. This is considered an interim development regulation to restrict development for a limited period of time (and the courts have placed strict and detailed guidelines on their use).

To many advocates, the current approach to land use control stands directly in the way of smart growth. This problem, however, has two distinct aspects, one of which is very difficult to change and another which may not be. The more difficult thing to change (because many would argue that it should not be changed) is the almost exclusive location of land use control at the lowest level of government (i.e., the municipal level), and the inherent weakness of regional planning that results. This conflict is at the heart of the smart growth/regionalism connection previously discussed. However, it is a difficult and controversial issue because the potential positive of coordinated planning (if, for example, land use decisions were subjected to greater county or regional control), is countered by the negative of weakening the powers currently enjoyed by municipalities which, it can be argued, are closer to those affected, and therefore more accountable. This is a difficult theoretical and political issue of great controversy.

However, a second and equally important aspect of land use regulation is that the majority of present zoning laws tend to reinforce sprawling growth patterns and prevent the construction of the traditional walkable, mixed-use, attractive and compact neighborhoods that smart growth advocates and new urbanists promote. This is a problem that individual communities can address on their own, and the tools to do so already exist. An aggressive statewide public information and education campaign could therefore be very effective at bringing about change.

The preponderance of current zoning laws, for example, focus on minimum lot sizes, setback and parking requirements, all of which contribute to low-density development and sprawl. These zoning techniques are often used to prevent large-scale development from taking place, or to prevent other types of development from occurring. Unfortunately, this approach to zoning is a major factor causing sprawl, because it causes developments to use more land per housing unit. Under this approach, piecemeal, developer-proposed subdivisions are the norm for new housing, and when land runs out or becomes scarce in one community, the development "leapfrogs" to further out communities.

[19] NYS Governor Pataki's press release of April 22, 2004 (http://www.state.ny.us/governor/)

While conventional zoning codes more often than not stand in the way of smart growth development, there are many creative approaches that can be used, including those described above. Planners and architects have developed new types of codes that encourage adaptable, mixed-use, pedestrian-friendly communities. Architectural reviews and other tools can be used to ensure quality construction that is consistent with a community's character.

Planned traditional neighborhood development generally will not happen under typical approaches to zoning. However, it can be accomplished using a variety of techniques such as those described above. The Smart Growth Network, for example, has compiled a library of successful zoning codes built on these and other techniques (*Smart Growth Zoning Codes)* as well as a number of other resources.

While the NYS Department of State provides a number of training opportunities and reference materials on zoning law and issues, including the creative techniques described above, none of their courses or reference manuals are directed specifically to the topic of smart growth or traditional neighborhood development.

Smart Growth in the Empire State

A variety of activities related to smart growth have been taking place in New York for some time, and it is useful to consider these efforts in the context of thinking about what else could be done.

Historic Preservation and Environmental Review

To the extent that it exists, the roots of smart growth planning at the State government level in New York can be traced to two significant pieces of federal legislation: (i) the National Historic Preservation Act of 1966, that required federal agencies to take into account the effects of their undertakings on historic properties, and (ii) the National Environmental Policy Act (NEPA) of 1969, that required examination of environmental impact from many points of view. It was during this era that New York State made a formal commitment to historic preservation and environmental soundness, creating the Historic Trust Office to administer a state program similar to the National Historic Preservation Act. That office later expanded to include many preservation activities and eventually became part of the State Office of Parks, Recreation and Historic Preservation (OPRHP). In 1978, the **State Environmental Quality Review Act** (SEQR) was enacted, which looks beyond historic impact and requires all state and local government agencies to consider environmental impacts equally with social and economic factors during discretionary decision-making.

Improvements in Municipal, County and Regional Planning

In the 1990s, the New York State Legislative Commission on Rural Resources and its Land Use Advisory Committee successfully advocated for a series of planning reforms that included: the establishment of a statutory procedure for preparing and adopting local comprehensive plans and definitions of what those plans should contain; encouragement of coordinated planning between local jurisdictions and state agricultural districts; a statutory framework for intermunicipal cooperation in planning; and the authorization for local governments to award incentive zoning credits or bonuses to developers who provide communities with qualifying benefits.

New York's counties have the statutory power to create planning boards and prepare a county comprehensive plan. The plan should include goals, objectives, principles, policies and standards upon which proposals for immediate and long-range development of the county are based. Despite encouragement from the State to prepare comprehensive plans, fewer than half the counties in the State have such plans; many were adopted years ago and are undoubtedly out of date,[20] as are many municipal comprehensive plans.

In New York State, municipalities also have the authority to create regional or metropolitan planning boards. Regional councils have been created in 45 of 62 counties and are collectively represented by the New York State Association of Regional Councils (NYSARC). A regional council is another vehicle for promoting regional planning and fostering smart growth. These councils are designed to promote inter-county cooperation for common and cross-boundary issues, and to develop and execute strategies that positively contribute to the region's well-being.

The regional councils were created to provide a comprehensive planning mechanism for coordinated growth and development. This includes promoting the region, and providing services such as economic development, land use, transportation, environment and water resources management, human resources management and regional data services. However, regional councils may only suggest; they lack the statutory power to compel local governments to cooperate.

While State law does require certain municipal zoning matters be referred to county planning boards or regional planning councils where they exist, the circumstances under which this occurs are limited (generally referral occurs when a proposed zoning matter affects property within 500 feet or more of a boundary or certain highways). The municipality, moreover, can override the county or regional planning body's recommendation in most cases.

Some of the most active regional planning agencies are non-profit organizations without any statutory power. For example, the Mid-Hudson Pattern for Progress is a non-profit public policy research and planning institute that has been very active in promoting smart growth topics in the Hudson Valley. Its mission is to "preserve and promote the social, economic and natural environments of the region by building a consensus for a pattern of growth that will ensure a high quality of life through the balance of a healthy environment and a vibrant economy."[21]

Quality Communities

A "Quality Communities Interagency Task Force" was formed by executive order in 2000, composed of staff from various executive branch agencies and chaired by the Lieutenant Governor. Interestingly, although the Quality Communities (QC) effort was fundamentally concerned with issues related to smart growth, the term itself was not used. The Task Force was to "study community growth in New York State and develop measures to assist those communities in implementing effective land development, preservation and rehabilitation strategies that promote both economic development and environmental protection."
The Task Force had a very broad charge, seeking to deal with issues such as revitalizing central cities, main

[20] A County Comprehensive Plan survey from the Department of State (January 2003) shows that only 13 counties are known to have comprehensive plans, and of these, 8 were adopted in the 1970's or before. In this survey, 17 counties stated they did not have comprehsensive plans; the situation for a number of counties is unclear.

[21] The website for the Mid-Hudson Pattern for Progress contains a full description of the organization's activities (*pattern-for-progress.org*).

streets and small towns; agriculture and farmland protection; conservation of open spaces and other critical environmental resources; transportation and more livable neighborhoods; and sustainable economic development. The QC Task Force issued a report[22] including 41 recommendations that were referred to a permanent interagency work group formed in April 2001. Most of the recommendations, however, only endorsed good practices – they did not call for changes in New York State policies or statutes to address smart growth issues.

The QC recommendations are aimed at very positive goals, such as using technology to distribute information and create development tools, promoting open space conservation, renewing agriculture, promoting shared services and encouraging sound transportation planning. There are many success stories within the recommendations, such as a pilot program to show local governments how to implement transfer of development rights.

The Quality Communities Demonstration Program, which provides grants to support planning initiatives, has benefited many communities. Other initiatives, such as the acquisition of forest and parkland, are also extremely positive, and have received greater attention as a result of being a focus of the QC effort.

However, many of the QC recommendations, while promoting positive goals, do not acknowledge that significant changes in current practices may be needed to accomplish these goals. For example, the report recommends coordination of highway improvement projects with community development plans, but it does not recommend any changes in State or local planning practices. From a smart growth perspective, there is no comprehensive transportation plan that attempts to connect road construction decisions with abandonment of downtown residential and commercial centers and the extension of suburban sprawl.

The QC working group, which is co-chaired by the Lieutenant Governor and Secretary of State, has a Quality Communities Clearinghouse web site (http://www.dos.state.ny.us/qc/) that refers to a variety of reference materials and funding sources, and which describes a large number of accomplishments including: cooperation and coordination among state agencies, training on planning and zoning for local officials, environmental protection measures, preservation of forest land and historic structures, and many more. Many of the accomplishments are the result of long-standing programs that are now included under the QC umbrella. QC also issues a newsletter that describes various projects and provides other relevant information.

The original Task Force report also called for the State to adopt a set of uniform "Quality Communities Principles" that all executive agencies would be directed to use as a guide for the allocation and administration of state resources. This concept is similar in approach to various recommendations from smart growth advocates, because it is believed that state actions are often either out of synch with, or even in direct opposition to, smart growth goals. However, the QC principles are all very general, and while positive, they could be said to have been in general use even before the Task Force met. The principles are:

- Revitalize our Downtowns and City Centers,
- Promote Agriculture and Farmland Protection,
- Conserve Open Space and Other Critical Environmental Resources,
- Enhance Transportation Choices and Encourage More Livable Neighborhoods,

[22] The report is available from the Department of State, the Lieutenant Governor's Office, or online at: http://www.state.ny.us/ltgovdoc/cover_pdf.html

- Encourage Sustainable Development,
- Strengthen Intergovernmental Partnerships, and
- Help Create, Implement and Sustain the Vision of a Quality Community.

There are, of course, many improvements included within the principles and related recommendations, some of which are currently being implemented. From a smart growth perspective, however, the principles do not effectively describe either a full or a specific enough agenda (as do, for example, the Smart Growth Network principles). While some Quality Community goals are similar to SGN goals, they do not generally call for the State to make any changes that would, for example, direct growth to existing communities or take advantage of compact building design. This should not be read as a failure of the QC effort, however, as it clearly was not an explicit part of the agenda set by the Governor. In fact, the QC efforts continue to avoid use of the smart growth term, without, it might be noted, actually articulating why the term is objectionable. This approach makes it more difficult to tie into national efforts, or to promote practices that are being advanced under the heading of smart growth elsewhere.

The Smart Growth Network principles, in comparison, outline a clear smart growth agenda that would be a dramatic change from current practices. The SGN principles are used by many state, local and regional smart growth groups to help define and clarify their goals, and a variety of publications expand on the principles, providing specific policies and steps for implementation.

Local Government Perspectives

Many local government leaders strongly support smart growth principles, but there is by no means unanimity in this regard. While smart growth initiatives can be popular, and the term is often used to describe local initiatives in a positive way, the linkage with regionalism and the contention that parochial views from local governments regulating land use are a large part of the problem tend to make it difficult for many local government officials to support smart growth in an unqualified manner.

New York's local government associations (NYCOM, NYSAC and the Association of Towns) do not track their members' smart growth initiatives, per se. However, they do have opinions on what the State should or should not do to help municipalities with smart growth. They are strongly opposed to any legislation that would restrict local decision-making or involve new State mandates. They argue that differing types of communities across the State require individualized approaches to development, and that local governments should be allowed to control their own destinies. However, the associations do support increased State funding to local governments for smart growth, such as that provided through the Quality Communities Demonstration Project, as well as money for the purchase of development rights, and tax credits for rehabilitating historic buildings.

The NYS Conference of Mayors and Municipal Officials (NYCOM) has put forth a group of "Smart Growth Economic Development Proposals," which call for incentives to locate businesses and people in urban areas, State support for property tax relief, regional economic development and tourism plans, brownfield remediation and open space preservation. NYCOM has also been very active in promoting "Main Street" redevelopment and rehabilitation of brownfields (properties with pollution problems from previous industrial and commercial uses that have fallen into disuse). NYCOM has training programs for their members on these and other issues.

Current Legislation

A variety of bills have been offered recently to address smart growth issues, including legislation to establish smart growth task forces, commissions and offices, and a revolving loan fund. Another proposal would provide tax exemptions for development projects meeting certain quality-of-life criteria, such as pedestrian-friendly design, mixed-use, parking kept behind buildings, and architectural qualities that enhance neighborhoods. Many of these proposals have been one-house bills, and none to date have been successful. However, this year there are several major smart growth bills with sponsorship in both houses that may have a better chance of enactment. These measures could provide a fundamental turnaround in State policies, helping to counter current sprawling growth patterns. A short description of each follows.

The State Smart Growth Public Infrastructure Policy Act (A. 8651 DiNapoli, Hoyt, Brodsky et al/S. 6255-A LaValle) – This bill would require State agencies and authorities to fund infrastructure in a manner consistent with smart growth principles. The principles enunciated in the bill include a priority for projects or actions that maintain or improve existing infrastructure or preserve agricultural land, forests, water, air quality, recreational and open space; as well as others to foster mixed-use and compact development, downtown revitalization, brownfield redevelopment, enhancement of public spaces, a diversity of housing in proximity to places of employment, recreation and commercial development, and the integration of all income and age groups. The principles support improved public transportation and reduced automobile dependency, as well as municipal, intermunicipal and regional planning.

Each infrastructure agency (including the Departments of Environmental Conservation, Transportation, Health, Economic Development, and the State Education Department, Housing Finance Agency, Environmental Facilities Corporation, Dormitory Authority, and Thruway Authority) would be required to give funding priority to existing infrastructure and projects that are consistent with these principles, as well as with local governments' plans for development. Each agency would also have to establish a smart growth advisory committee.

The bill's purpose is to "augment the State's environmental policy by declaring a fiscally prudent state policy of maximizing the social, economic and environmental benefits from public infrastructure development through minimizing unnecessary costs of sprawl," including environmental degradation, disinvestment in urban and suburban communities and loss of open space. It states that sprawl is "facilitated by the funding or development of new or expanded transportation, sewer and ... other publicly supported infrastructure inconsistent with smart growth." The sponsor's memorandum states that infrastructure funding decisions in New York State have supported a pattern of settlement and land use which necessitates expansive and expensive infrastructure resulting in new roadways, water supplies, sewer treatment facilities, utilities and other public facilities at great cost to the taxpayer and the ratepayer. With this pattern of dispersed development, public investment in existing infrastructure located in traditional main streets, downtown areas and established suburbs has been underutilized and those areas have suffered economically.

The Smart Growth for a New Century Act (A. 8652 DiNapoli, Hoyt, Brodsky, et al./S. 5483 LaValle) – This bill creates an optional process for communities to create smart growth plans that adhere to certain principles; development projects consistent with those plans would be eligible for low-interest loans through a smart growth revolving loan fund, as well as being eligible for property tax exemptions and priority for state financial assistance. A process is created under two or more individual municipalities can develop a shared

vision by creating a "smart growth compact" using a public discussion process and special councils. The plan would have to adhere to a series of principles, including conservation, accounting for and minimizing social, economic and environmental costs of new development, providing transportation and housing choices, and supporting mixed-use and integration of income and age groups. Local plans would be reviewed by a state-wide smart growth review panel. Development projects in a compact area that are not consistent with smart growth compact plans would then not be approved by any government entity or supported by state financial assistance. Each municipality's land use regulations would have to be consistent with the compacts. The bill also creates an office of local assistance within the Department of State to provide technical, scientific, and financial assistance to localities for smart growth planning.

The Community Preservation Act (A.10053 DiNapoli/S. 6949 Marcellino) – This bill would authorize towns in New York State to adopt, after a local referendum, a real estate transfer tax of up to 2 percent for the purpose of establishing a community preservation fund to be used for conservation. The bill is based on the successful effort of five towns at the east end of Long Island in establishing a community preservation fund to protect drinking water, conserve parkland, safeguard habitats and help halt sprawl into pristine, green locations. It would allow communities across the State to establish their own voter-approved community preservation funds. Currently, municipalities must get specific legislative approval before asking their voters for a tax on real estate transfers for preservation purposes. The bill contains a provision to provide an exemption equal to the median residential sales price in the county (thus exempting more affordable, existing housing from the transfer tax).

Progress in Many Areas

Many individual local governments and regional groups in New York State are making progress in dealing with problems related to growth. The discussion presented in this paper, while alluding to areas where improvements could be made, should not be interpreted to be dismissive of these efforts. Those who believe that smart growth issues can be dealt with locally often point to these successes as evidence that progress can be achieved without any further state-level changes. The successful examples provided below are presented for illustration. It would not be possible in a report of this size to comprehensively list all local successes, and we have chosen just a few examples.

Onondaga County Settlement Plan

The Onondaga County Settlement Plan is an application of new urbanism principles put together over a two-year period beginning in 1999. It is a regional plan prepared for the joint Syracuse-Onondaga County Planning Agency by pioneering architect Andres Duany. The Plan's intention is to "encourage and enable municipalities in Onondaga County to improve their residents' quality of life through a renewed emphasis on neighborhoods." Specifically, the Plan began by acknowledging that the County's greatest strength was its tradition of historic neighborhoods, and then focused on providing the tools that could most effectively reinforce that tradition.[23] The Settlement Plan was preceded by the 2010 Development Guide, adopted in 1991, which laid out a policy

[23] *Onondaga County Settlement Plan - The Regional Plan and Pilot Projects*, Duany Plater-Zybeck & Company (2001), available at: http://www.syracusethenandnow.net/SettlementPlan/Regional%20Plan%20Final.pdf

under which Onondaga County would use its responsibilities for roads, water supply and wastewater treatment to direct growth to existing urban areas and community centers and to avoid unnecessary new infrastructure costs. Specifically, the Guide made it County policy not to extend water and sewer lines to serve new residential development.

As described in the Settlement Plan, Onondaga has experienced two forms of growth: traditional neighborhood development and suburban sprawl. The dominant model until World War II was the traditional neighborhood, which is characterized by mixed use (e.g., shopping and residential), pedestrian scale, and clear identity. The dominant model since that time has been suburban sprawl, characterized by the strict separation of land uses, an environment unfriendly to pedestrians, and a complete dependence on automobile transportation. The traditional neighborhood model – represented by the villages, hamlets and city neighborhoods – is associated with a high quality of life, while suburban sprawl is associated with erosion in this quality of life, increased traffic, inner-city deterioration, and a general sense of placelessness.

The Settlement Plan consists of a regional plan, pilot projects, traditional neighborhood development (TND) guidelines and codes. It is important to understand that the post-war sprawl occurred under existing zoning and subdivision regulations that effectively outlawed traditional neighborhood development. The Settlement Plan accordingly provides descriptive guidelines for traditional neighborhood development, as well as a prototypical traditional neighborhood zoning code, which can be adopted by municipalities in the area.[24] Syracuse has used the prototype TND zoning code in its lakefront area and two suburban towns, Dewitt and Tully, are in the process of incorporating elements of TND within their existing zoning laws and comprehensive plans. Design and planning projects for seven pilot neighborhoods have been well received, and some have had development projects start already. For example, the Village of Liverpool, currently cut in half by a six-lane road is to become a revived, pedestrian-friendly Main Street area with connections to Onondaga Lake Park. The plan includes redesign of the Lake Parkway from a high-speed commuter road to a naturalized parkway. A new urbanist neighborhood project is also under construction in a pilot project in the Town of Camillus.

Genesee County Smart Growth Plan

The Genesee County Smart Growth Plan, enacted in 2001, was designed to prevent sprawl from occurring in connection with the extension of public water to many areas. Under a plan to obtain water from the Monroe County Water Authority, a pipe system is to be installed that follows almost every State highway in the County. While the system was needed to meet existing needs, the fear was that wide availability of public water could spur sprawling development across the County, destroying its rural character, even as its villages and hamlets continued to decline.

Genesee's Smart Growth Plan protects farmland and the rural character of the area by using several zoning techniques that the County Planning Department is working with local governments to adopt (including cluster zoning), as well as a water hook-up policy that effectively prevents sprawl. Under the plan, hook-ups will be restricted to existing development (before enactment of the plan) and future development that is located within predetermined and mapped development areas surrounding villages and hamlets. The idea is to target

[24] The traditional neighborhood guidelines, codes, and other reference materials are available online: http://www.syracusethenandnow.net/SettlementPlan/SettlementPlan.htm

development of new homes and businesses in development areas served by public water, building up existing villages and hamlets while protecting farmland from sprawling development. This plan is almost equivalent in impact to an Oregon-style urban growth boundary (see below), and is accomplished using existing zoning techniques, as well as a very specific water hook-up policy.

Activities in the Capital District

Actions in a variety of Capital District communities illustrate how smart growth issues are being advanced. In rapidly growing successful suburbs, town governments are taking steps to protect themselves from the effects of sprawl. In Clifton Park, for example, the town has created a plan for saving selected open spaces before they are developed, and put a moratorium on building in the Western section of town. In the Town of Bethlehem, a moratorium on new residential construction has been adopted (applied to new projects of four or more units), while the town works on its master plan. Albany is trying to lower the number of vacant buildings and revitalize low-income neighborhoods by offering financial incentives to homebuyers, encouraging city police to live in the neighborhoods and preserving historic structures.

On a regional level, the Center for Economic Growth (CEG), a business-supported regional economic development organization, has been leading efforts to shape a regional development strategy, in connection with promoting "Tech Valley" – high-tech manufacturing in the Capital and Hudson Valley Regions. In addition to traditional economic development goals, CEG is working with community leaders on what is in essence a smart growth agenda, creating urban centers that are cultural hubs and regional magnets for young technology workers, creating and maintaining infrastructure that supports sustainable residential and commercial development patterns that balance growth with quality of life. This effort has also been supported by the State Pension Fund Upstate Venture Capital Investment Fund, which has made a $55 million commitment to two Capital Region-based private equity partnerships that will establish and expand high-tech start-up companies in Upstate New York.

Lessons from Other States

A variety of state-led smart growth initiatives are taking place across the nation, including our neighboring states. While several pieces of legislation have been proposed, and the Quality Communities Task Force effort is ongoing, New York State really has no corresponding effort.

Smart growth is a broad and complex topic, and there is, and will continue to be, debate about what state governments should do to promote it. At a minimum, however, to provide effective leadership in this area, state governments must address the term – smart growth – or efforts to promote various approaches associated with the national smart growth movement will be handicapped. A successful effort must provide guidance to local government officials and encourage strong regional cooperative efforts, even as changes in law or procedures are considered. Our neighboring states are actively involved in such efforts.

Many have concluded that regional action is a necessary condition for a truly successful smart growth initiative. Researchers and others have also concluded that regional reforms generally only occur when initiated by state governments, which can control political and financial incentives and disincentives and set the rules under which local governments operate. Among the things state governments can do to encourage regional action are: adopt rules to reorganize particular governmental operations, require or encourage certain levels of cooperation, remove legal and other barriers to cooperation, finance studies that advance regional cooperation, tie state aid or reimbursement formulae to regional approaches, or establish subsidies that reduce local costs for services only if delivered on a broad geographical basis. More subtly, states can act in ways that change the political environment, altering citizens' expectations of their local governments.[25]

Following are some examples of activities in Oregon, considered by many to have the most advanced state smart growth program, and our neighboring states of New Jersey and Connecticut.

Oregon

To supporters and detractors of smart growth alike, Oregon is the quintessential model. During the 1960s and '70s, when Oregon's population was increasing considerably, the impact on its environment and economy became major issues of concern. Wanting to preserve its natural resources, including its environmentally based forestry and farming industries, the state required cities and counties to adopt comprehensive land use regulations. While Oregon does not have one formal land use plan with which all municipalities must comply, it has established statewide standards (statutes, planning goals and administrative rules) against which local land use plans are reviewed.[26]

A key element of Oregon's land use policy is the requirement that every city and major region delineate an urban growth boundary (UGB) within which development and publicly funded infrastructure expansion are to be confined. Supporters emphasize that the UGB is not a device to stop growth, but a means of allowing a community to define the territory within which it can reasonably provide public services economically. Land outside the UGB is generally used for forestry, farming or low-density residential development, but will not have urban services, such as sewers, extended there. Proponents describe immense benefits of UGBs, especially environmental protection. Critics say the UGB system drives up land prices within the boundary area and stifles growth. UGBs can be expanded, provided that modifications adhere to statewide land use and planning laws. This type of smart growth approach is remarkably effective at reining in sprawl, while allowing for planned expansion.

New Jersey

New Jersey's Governor has made smart growth a major goal, declaring in his 2003 State of the State address that there is "no single greater threat to our quality of life than the unrestrained development that is driving up property taxes, crowding our schools, and threatening our water supply." New Jersey's Office of Smart Growth is charged with implementing the New Jersey State Development and Redevelopment Plan, which calls for preventing pollution, traffic congestion, and sprawl, while developing economic vitality and building a better quality of life.[27]

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[25] *Regionalism and Realism*, Gerald Benjamin and Richard P. Nathan, A Century Foundation Book, Brookings Institution Press (2001).
[26] *Oregon's Statewide Land Use Planning Fast Facts*, p. 1 http://www.lcd.state.or.us/fastpdfs/fastfacts.pdf
[27] New Jersey Department of Community Affairs, Office of Smart Growth website: http://www.nj.gov/dca/osg.team/executivedirector.shtml

The Transfer of Development Rights bill recently passed in New Jersey is designed to steer developers toward the village centers and away from farmland. According to one observer, the law lets municipalities effectively set growth boundaries so preservation areas can be established where they could not have been before. New Jersey also has a Business Employment Incentive Program that offers businesses 80 percent of personal income tax withholdings from new jobs added in targeted "'smart growth" urban communities or distressed municipalities, with businesses creating jobs elsewhere eligible for 50 percent of such withholdings.

Connecticut

Connecticut is now deliberating the fifth five-year update of a conservation and development plan first adopted in 1979. The new plan includes six growth-management principles and is described as being more prescriptive than previous plans for the state's 169 municipalities and 15 regional planning organizations. The draft plan lists the following principles:

- Redevelop and revitalize regional centers and areas with existing or currently planned physical resources
- Expand housing opportunities and design choices to accommodate a variety of household types and needs,
- Concentrate development around transportation nodes and along major transportation corridors to support the viability of transportation options,
- Conserve and restore the natural environment, cultural and historical resources, and traditional rural lands,
- Protect and ensure the integrity of environmental assets critical to public health and safety, and
- Promote integrated planning across all levels of government to address issues on a statewide, regional and local basis.

The proposed plan is augmented by a "locational guide map," and strongly supports regional efforts, stating: "Creating an ethic of regional coordination is key to the successful implementation of all the growth management principles ... Regional coordination is about pragmatic, rather than political, solutions to the mounting fiscal burdens on Connecticut taxpayers." Among its references, the draft plan lists the recent report by a Blue Ribbon Commission on Property Tax Burden and Smart Growth Incentives, which confirms other study findings that "current patterns of development in Connecticut are not sustainable." The Commission defined smart growth as "a comprehensive planning process that encourages patterns of development that can accommodate and sustain economic growth while at the same time limiting sprawl, reducing transportation congestion, protecting natural resources, preserving the traditional character of communities and ensuring equitable access to affordable housing, jobs and community services."[28]

The Connecticut Conference of Municipalities (CCM) has taken a strong position in favor of smart growth. Based on concerns about sprawling growth, resulting property tax increases, erosion of the environment and quality of life, and a negative impact on economic development, CCM formed a smart growth task force that produced 10 specific principles for smart growth in Connecticut. CCM is urging the Connecticut state government

[28] Connecticut Office of Policy & Management (12/2003), (www.opm.state.ct.us/)

to take steps to implement a smart growth policy, including (1) obtaining the information needed to know where land use is today and where it is heading, (2) developing consensus on short- and long-term goals and actions, and (3) devoting state, local, private-sector and other resources to make smart growth work.[29]

Support is growing for steps to rein in sprawl, according to a *Hartford Courant* editorial urging passage of a sound anti-sprawl bill that would encourage development in urban areas, which already have an infrastructure of roads, sewers, schools and public safety services. The bill would allow for improved planning, call for a study of sprawl, and allow big cities to adopt a split-rate property tax system with land taxed at a higher rate than buildings.[30]

Smarth Growth and Economic Development

Many local, state and national leaders have said that smart growth and economic development should complement one another, and be viewed as mutually reinforcing, rather than conflicting goals. Opponents of smart growth, on the other hand, often argue that it stands in the way of economic development.

There are two basic aspects to the relationship between smart growth and economic development. The first is smart growth's potential impact on local fiscal conditions (which in turn affect local economies) and the second is the direct effect that smart growth can have on business conditions by improving an area's quality of life (including the environment, housing, cultural and recreational opportunities), transportation system, and economic profile (synergistic businesses or industry clusters within a region, for example).

The impact of growth patterns on local fiscal conditions has been acknowledged and discussed long before the smart growth term was used. Development patterns obviously affect local tax bases and service costs, which in turn affect local tax rates. While there is some disagreement over the extent to which local taxes influence business location decisions and/or economic growth, and whether the effects of good government services or a well-educated workforce outweigh higher taxes, no one would say that there is not a relationship between local taxes and the business climate. To the extent that it can result in a more efficient governmental structure, both physically and organizationally, smart growth is therefore a fundamental ingredient of a successful local economic development strategy. In contrast, poorly planned, sprawling growth has the following negative fiscal impacts:

- It increases costs for local services in rapidly growing communities.
- More sparsely used infrastructure, such as more road and water/sewer miles per housing unit, drives higher unit costs in both growing and declining communities.
- Development that is exclusively residential in many communities fails to offset the cost of new services, particularly for schools.
- In cities and other declining population centers, middle-class exodus results in a concentration of disadvantaged residents, creating greater costs at the same time underutilized infrastructure results in inefficiencies.

[29] *Advocacy and Public Policy* (September 20, 2002, Number 02-04) Connecticut Conference of Municipalities
[30] "Anti-Sprawl Bill would Stimulate New Construction in Urban Areas," *Hartford Courant* 3/3/2004

Local officials have for years used various short-hand assumptions concerning the fiscal costs of certain types of development. Expressions such as "every time I see a new house, I say there goes another $1,600" are common, because as a general rule, residential development generates more costs than revenues.[31] Local officials also speak about "chasing after rateables" – meaning the more fiscally beneficial forms of development, including office buildings, motels, manufacturing plants and shopping centers. There are studies, in fact, that show the average ratio of tax revenues to costs of services for various types of business enterprises.[32]

A more comprehensive view of the costs of sprawl must compare the relative impact of sprawling growth versus planned growth – a difficult thing to quantify. However, there are a number of approaches that can be used and a number of studies that have done such analyses. One of the most frequently cited is an impact assessment that was prepared by Rutgers University for the New Jersey State Development and Redevelopment Plan,[33] which found significant savings for planned, rather than sprawling, growth. Planned development was estimated to consume 20-45 percent less land than sprawl, costing 15-25 percent less for local roads and 7-15 percent less for water and sewer lines. The estimated comparisons for housing costs and overall fiscal impacts (municipal and school services), while favoring planned development, exhibit less of a difference.

The impact of smart growth directly on economic development is more difficult to measure, and in some cases conceptualize, but it has long been recognized. Economic growth is dependent on the availability of locations for business occupation or development, and business location decisions have long been known to be driven by a variety of considerations, including those relating to transportation, business environment, local taxes, etc. However, it is also known that location decisions are also influenced by quality of life considerations. These considerations are becoming increasingly important in the "new economy," where "knowledge workers" or the "creative class" is the fundamental economic input. Simply put, in this type of a business, where people *want* to live is more important as a location factor.

Increasingly, local leaders are recognizing the impact of quality of life and what might be called the business quality of life. For example, New York City's preeminence as a location for corporate headquarters, the financial industry, and more currently, "new economy" knowledge and creative businesses has always been driven by the amenities of the area and the concentration of these types of business there. Regional strategies built on these fundamental relationships (i.e., it's a nice place to live and operate this sort of business) are being pursued across New York State and the nation. The Tech Valley initiative, for example, which is being aggressively promoted on a regional basis, is much more than a direct effort to attract technology firms. It includes a strong focus on making the region ready for such development through smart growth policies that ensure that the region will remain an attractive place to live, and even improve, as new development occurs.

The number of efforts that could be listed in this regard is limitless, because they are and have been the focus of virtually every major civic, business, economic development and regional planning group, whether the term smart growth is used or not. The real question, then, is not whether such relationships exist, but whether a more focused statewide effort on smart growth can broaden and accelerate smart economic development. If a

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[31] *Why Smart Growth: A Primer*, International City/County Management Associations/SGN, p. 17.

[32] See, for example, "The Relative Importance to Montgomery County of Selected Economic Activities" as described in *Why Smart Growth: A Primer*, p. 18.

[33] Impact Assessment of the New Jersey Interim State Development and Redevelopment Plan, prepared for the New Jersey Office of State Planning by Rutgers University - Center for Urban Policy Research, Robert W. Burchell, et al (February 1992), (http://www.state.nj.us/dca/osg/docs/iaexecsumm022892.pdf)

heightened focus on smart growth throughout the State helps make each region a better place to live, in other words, would that not have a positive, self-reinforcing impact on the economy?

New York State's current economic development policies, including the Empire Zone program and the activities of local Industrial Development Authorities (IDAs), have come under intense scrutiny, and there is a general perception that these devices are increasingly being used (or manipulated) to merely subsidize the movement of businesses and jobs from one area of the State to another.

The Empire Zone program has been criticized by many as straying from its initial focus, which was to assist areas in economic stress, because zones can now be created almost anywhere. In recent testimony on the State budget, for example, the Sierra Club criticized the Luther Forest proposal in Saratoga County to designate an empire zone to attract micro-chip manufacturing plants: "The zones are being used to incentivize the destruction of open space in areas that are characterized as rapid growth and are pretty well off financially. In an age when we talk about promoting smart growth and quality communities, there is something distasteful about using state incentives to destroy open space."[34]

The Comptroller has proposed a number of reforms aimed at refocusing the Empire Zones program on its mission of creating jobs and attracting private investment to stimulate economic activity in struggling communities around the State.

Industrial Development Authorities (IDAs) have faced similar criticisms. Although IDAs were never intended to lure businesses from one location within the State to another – a practice often referred to as job "pirating" – many IDA projects seem to have this impact. When tax incentives are used in a manner that only produces relocation, there is no benefit to the State in terms of job creation. Pirating also works against efforts to create a strong regional approach to economic development.

IDAs are also prohibited from providing financial assistance for retail projects (including stores and other retail operations, such as motels, legal or medical offices, etc.). Retail ventures are treated differently because by definition they do not increase the level of demand or production, and can damage competitors or put them out of business. For example, a chain grocery store opening up in a community generally will not increase the demand for groceries, but will lure shoppers away from already established, often smaller and independently-owned neighborhood stores, potentially putting them out of business and severely damaging neighborhood convenience. The difference in jobs produced by a new store and the jobs lost by the store closing might even be a net loss. Unfortunately, the general prohibition on retail projects has a number of exceptions (implemented at the discretion of local IDA boards) that make the prohibition almost completely ineffective.

A 1996 report from the Assembly's Local Governments Committee found that despite the anti-pirating provision, pirating still accounted for a large part of IDA activity, and the retail sales prohibition was found to be similarly ineffective. Comptroller's audits and other reports have had similar findings. The Comptroller has launched a public authorities reform initiative and is reviewing IDA reporting.

[34] Testimony of the Sierra Club – Atlantic Chapter, presented to the Joint Hearing on the Budget (2/10/2004).

Concluding Policy Questions

This is a propitious time to consider broad changes in New York State's approach to land use and economic development policies. A variety of economic and social forces are acting upon both the State and its municipalities, forcing consideration of fundamental changes. As cities continue to hemorrhage population and jobs, and some falter on the verge of financial collapse, people in surrounding regions are recognizing that deterioration of their core communities is a fundamental threat to regional economic and cultural well-being. There is a renewed interest in shared services and consolidation, and city-county mergers are even being discussed.

A number of vital questions should be reviewed in a robust public dialogue, even as current legislative proposals are considered. Simply put, there are a number of big-picture questions that should be answered, including the following:

- What are the monetary and other costs of sprawl to New York State, and to what extent is sprawl an impediment to healthy local economies?
- What approaches would be most effective in modifying current sprawling growth patterns (e.g., changes in planning requirements, fiscal incentives)? What approaches should be avoided?
- How far can (or should) New York State go to promote regional solutions to regional problems?
- Is the current fragmented system of local economic development agencies and land use planning and regulation an impediment to effective regional smart growth and economic development? Are there better ways to make the system work?
- Should comprehensive planning be required at the local, county, regional or State level? Is there a way to effectively coordinate these plans within an overall smart growth and smart economic development plan?
- Can the State do a better job of promoting traditional neighborhood development and assisting local governments with developing zoning codes to support this type of development?
- What are the economic benefits of an aggressive smart growth agenda? Are there economic costs for some approaches?
- Should the State use financial or other incentives to direct development toward existing communities? Should the use of economic development incentives in ways that promote sprawl be discouraged or prohibited?
- Could a State-level smart growth cabinet help ensure that the actions of State agencies and public authorities support smart growth principles?

Appendix: Resources

National

- Smart Growth Network (http://www.smartgrowth.org)
- The Congress for New Urbanism (http://www.cnu.org)
- International City/County Management Association (http://www.icma.org)
- Lincoln Institute of Land Policy (www.lincolninst.edu)

New York State

- *The Local Government Handbook (5th Edition)*, NYS Department of State (January 2000) and available online (www.dos.state.ny.us/lgss/pdfs/Handbook.pdf)
- New York Main Street Alliance (http://www.cardi.cornell.edu/nymsa/resources.cfm)
- NYS Quality Communities Clearinghouse (http://www.dos.state.ny.us/qc/home.shtml)
- Onondaga County Settlement Plan (http://www.syracusethenandnow.net/SettlementPlan/SettlementPlan.htm)

Other States

- Oregon's Statewide Land Use Planning Fast Facts (http://www.lcd.state.or.us)
- New Jersey Department of Community Affairs, Office of Smart Growth (http://www.nj.gov/dca/osg/)
- Connecticut Conference of Municipalities (http://www.ccm-ct.org/index.html)

Reading List

- *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*, Andres Duany, et al, North Point Press (April 2001)
- *The Geography of Nowhere*, James Howard Kuntsler, Simon and Schuster (1993)
- *Home From Nowhere: Remaking Our Everyday World For The 21st Century*, James Howard Kuntsler, Simon and Schuster (1998)
- *Changing Places – Rebuilding Community in the Age of Sprawl*, Richard Moe and Carter Wilkie, Henry Holt and Company, Inc. (1997)
- *Why Smart Growth – A Primer*, International City/County Management Association (ICMA) (http://www.epa.gov/livability/pdf/WhySmartGrowth_bk.pdf)
- *Getting to Smart Growth: 100 Policies for Implementation* ICMA (2003) (http://www.smartgrowth.org/pdf/gettosg.pdf)
- *Getting to Smart Growth II: 100 More Policies for Implementation* ICMA (2003) (http://www.smartgrowth.org/library/articles.asp?art=870)
- *Alternatives to Sprawl*, Lincoln Institute of Land Policy (1995) (www.lincolninst.edu/pubs/pub-detail.asp?id=864)

OSC Office Listing

EXHIBIT G

6

OFFICE OF THE NEW YORK STATE COMPTROLLER

DIVISION OF LOCAL GOVERNMENT SERVICES
& ECONOMIC DEVELOPMENT

Local Government Sales Taxes in New York State

DESCRIPTION, TRENDS AND ISSUES

ALAN G. HEVESI

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Executive Summary

Sales taxes are a significant component of revenue for local governments in New York State, representing 8.6 percent of total local government revenues in 2004 ($9.8 billion out of $114.5 billion). Section One of this report describes various aspects of the sales tax, including current rates and methods of distribution to municipalities and school districts in those counties which share these revenues. It also discusses characteristics of the sales tax as a revenue source, long-term and recent revenue trends and other issues. Section Two provides technical and statutory information on the sales tax and provides answers to frequently asked questions about its administration.

- Local sales tax rates in New York range from 3 to 5.5 percent. When combined with the State sales tax of 4 percent, total sales tax rates in the State range from 7 to 9.5 percent.

- New York State has one of the highest combined state/local sales tax rates in the nation, with only Tennessee, Louisiana and Washington being higher. The State's average combined state-local sales tax rate of 8.25 percent for New York compares to a national average rate of 5.93 percent.

- While general State statute allows local tax rates up to 3 percent, only eight counties currently impose this base rate. The other 49 counties have received specific State approval for rates above the 3 percent statutory limit, including six counties with local rates that exceed 4 percent (Oneida, Erie, Allegany, Chautauqua, Nassau and Suffolk). New York City has a local sales tax rate of 4 percent. Although the rates in excess of 3 percent are often referred to as "temporary" taxes, in many cases these rates have been in effect for decades. Several downstate counties and the City are also subject to a 0.375 percent sales tax dedicated to the Metropolitan Transportation Authority.

- Today, approximately 85 percent of the State's population resides in areas where the combined tax rate is 8 percent or higher.

- Sales tax revenues grew by nearly 45 percent from 1993 to 2001, more than double the rate of growth of property taxes, which grew by 20 percent during this period. However, with the economic downturn that began in 2000, sales tax growth slowed to 15 percent from 2001 to 2003, below the growth of property taxes for that period (17 percent). Recent data suggest a return to more normal growth rates, albeit at a slower pace than in previous years.

- The majority of counties (43 out of the 57) have some form of sales tax sharing arrangement with other local governments within their boundaries. Five of these counties include school districts in their distributions. This report includes descriptions of county distribution formulas, which are based on a variety of measures including population, property value, and/or average daily attendance (for school districts). A number of counties earmark sales tax revenues for certain expenses such as Medicaid, capital projects and debt service.

Overview

This report describes various aspects of the local sales tax, including current rates and methods of distribution to municipalities and school districts in those counties which share these revenues. It also discusses characteristics of the sales tax as a revenue source, long-term and recent trends, administration and other issues.

Sales taxes represent an important source of revenue for New York State's local governments. This revenue stream has helped local governments cope with the rising costs of providing services and, in some instances, has helped to mitigate property tax increases. The degree to which local governments depend on the sales tax varies – counties and cities are more dependent upon this revenue source – and their reliance on sales tax in terms of the overall revenue mix has increased.

In New York State, counties and cities are authorized to levy a local sales tax, which is imposed in addition to the State sales tax of 4 percent. Generally, the sales tax is levied at the county level and sales tax proceeds are distributed to other units of government within county boundaries, in accordance with local sharing agreements. However, not all counties share a portion of their sales taxes.

All counties currently impose a sales tax, and most share a portion of the sales tax proceeds with other local governments within their borders. Cities generally have the right to pre-empt the county and levy a sales tax directly within their borders (i.e., rather than take a distribution from the county), and 22 cities currently do so. New York City (which is unique in that it is a city that encompasses five counties) also imposes a local sales tax of 4 percent. Several downstate counties and the City are also subject to a 0.375 percent sales tax dedicated to the Metropolitan Transportation Authority.

Many counties have received special legislative approval for local sales tax rates beyond 3 percent. Today, 49 of 57 counties and New York City have local sales tax rates that exceed the 3 percent statutory limit, including six counties with local rates exceeding 4 percent. Approximately 85 percent of the State's population resides in counties where the combined tax rate is 8 percent or higher.

Sales tax revenues are economically sensitive. During the economic expansion of the 1990s, sales tax revenue grew by nearly 45 percent, more than double the rate of growth for property tax revenues during this period. However, with the economic downturn that started in 2000 and was exacerbated by the terrorist events of 2001, many localities experienced sluggish sales tax growth. From 2001 to 2003, sales tax revenues grew by 15 percent, below the growth in property tax revenues of 17 percent. Recent trends indicate a return to sluggish but more normal growth.

	20.4%	26.2%	25.6%	24.9%
	16.3%	29.4%	17.3%	26.8%
	8.7%	55.6%	9.2%	50.3%
	5.6%	48.3%	5.5%	45.0%
	1.3%	53.0%	1.0%	54.3%
	6.3%	20.1%	6.7%	19.7%
	8.0%	30.6%	8.6%	30.6%

Source: Annual Financial Reports filed with the Office of the State Comptroller

Counties and cities are the most reliant on sales tax revenues, and their relative dependence has increased over the last decade. In 1994, the property tax made up 26.2 percent of total county revenues and the sales tax made up 20.4 percent. By 2004, the property tax as a share of revenue dropped to 24.9 percent and the sales tax share increased to 25.6 percent—a reversal of relative importance. City and town reliance on sales taxes has also increased modestly. The percentage of revenue derived from sales tax revenues in villages and school districts is low and has remained relatively unchanged.

Using 2004 revenue data, nine of 61 cities rely more heavily on sales tax as a revenue source than they do the property tax. Sales tax as a percent of total city revenue ranges from a high of 29.2 percent to a low of 2.5 percent. On a county by county basis, 18 counties rely more heavily on the sales tax as a revenue source than the property tax. For this class, sales tax as a percent of total revenue ranges from a high of 43.5 percent to a low of 8.5 percent.

For the most part, sales tax revenues are used to fund current operations. However, there are instances where sales tax revenue is earmarked for specific purposes. One example is the Suffolk County Drinking Water Protection Program wherein a portion of the total revenues generated annually by the sales tax is dedicated to offsetting the County cost of its various environmental programs.

Because the sales tax is directly related to changes in economic conditions, budget forecasts can be difficult to construct, and conservative forecasting techniques can help avoid shortfalls in revenue projections. Collections histories, as well as statewide economic forecasts related to factors that affect the sales tax (such as GDP, employment trends, retail trade and wage growth) are all useful tools for developing projections.

By nature the sales tax is a regressive tax, meaning lower income individuals spend a higher proportion of their income on sales taxes relative to higher income individuals. To help mitigate this effect, many states exempt basic goods such as food or clothing from the sales tax.

All sales and use taxes in New York State are collected locally by vendors (stores and other retailers), with the tax paid at the point of sale. Vendors then forward tax collections to the NYS Department of Taxation and Finance, which sends the local portions of the revenues to counties (through the State Comptroller's Office).

Section 1
Current Local Sales Tax Rates

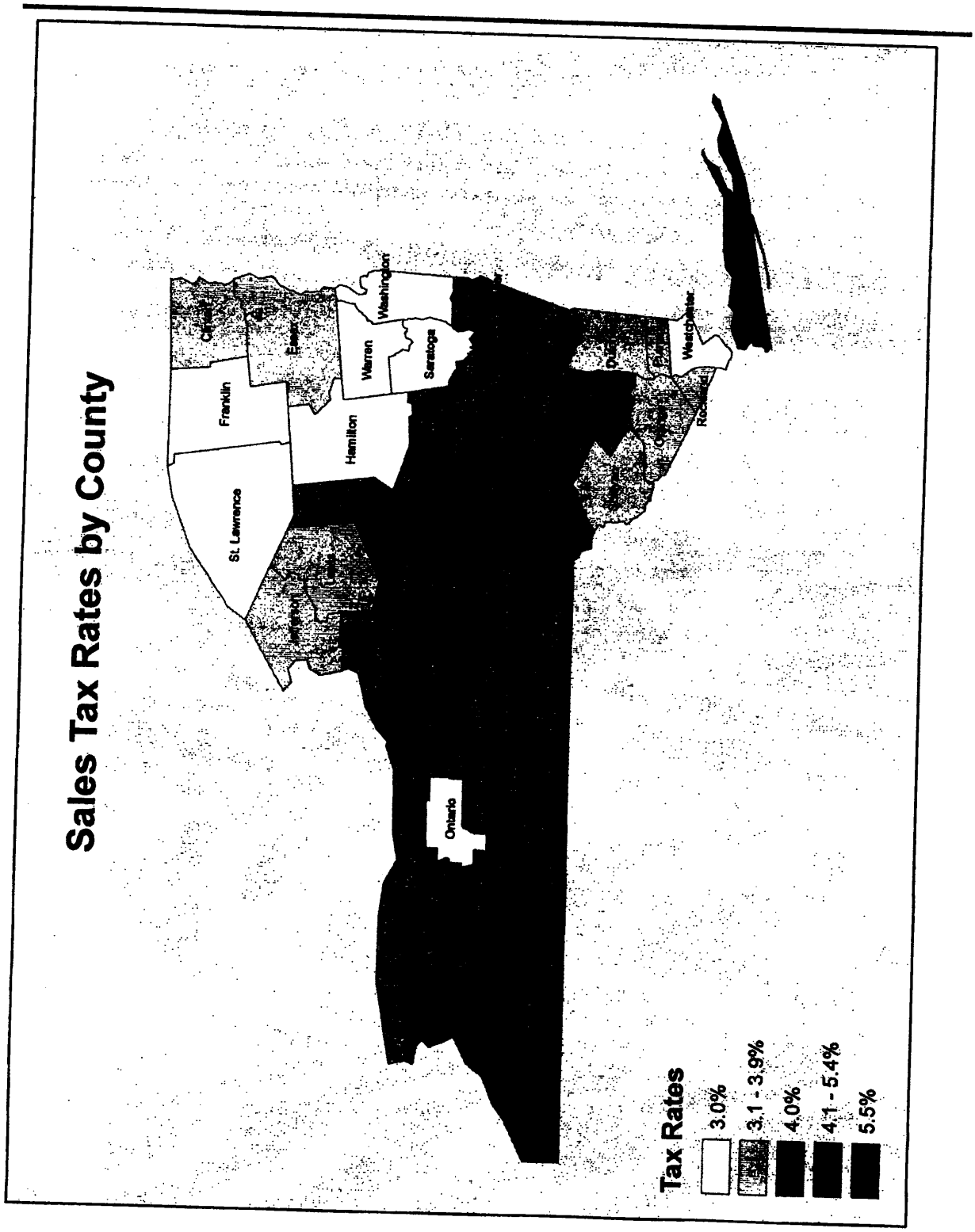
A local sales tax is imposed by all 57 counties and 22 cities (including New York City) at the following rates (as of March 2006):

- Eight counties have local sales tax rates of 3 percent: Franklin, Hamilton, Ontario, St. Lawrence, Saratoga, Warren, Washington and Westchester.
- Forty-nine counties have local sales tax rates exceeding 3 percent: Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Fulton, Genessee, Greene, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, Niagara, Oneida, Onondaga, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Schenectady, Schoharie, Schulyer, Seneca, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Wayne, Wyoming and Yates.
- New York City has a local rate of 4 percent.
- Six counties have sales tax rates above 4 percent: Allegany, Chautauqua, Erie, Nassau, Oneida, and Suffolk.
- Oneida County has the highest sales tax rate in the State at 5.5 percent—9.5 percent when combined with the State's 4 percent.
- Twenty-two cities levy their own sales tax (pre-empt): Auburn, Corning, Fulton, Glens Falls, Gloversville, Hornell, Ithaca, Johnstown, Mount Vernon, New Rochelle, New York City, Norwich, Olean, Oneida, Oswego, Rome, Salamanca, Saratoga Springs, Sherrill, Utica, White Plains and Yonkers. Local rates range from 1.5 percent to 4 percent (New York City, Oswego and Yonkers) with most cities at a rate of 1.5 percent. The sales tax rates of the cities of Canandaigua and Geneva were repealed effective March 1, 2006.

ONEIDA	5.50	LIVINGSTON	4.00	WYOMING	4.00
ERIE	4.75	MADISON	4.00	YATES	4.00
ALLEGANY	4.50	MONROE	4.00	CLINTON	3.75
CHAUTAUQUA	4.25	MONTGOMERY	4.00	DUTCHESS	3.75
NASSAU	4.25	NIAGARA	4.00	ESSEX	3.75
SUFFOLK	4.25	ONONDAGA	4.00	JEFFERSON	3.75
ALBANY	4.00	ORLEANS	4.00	LEWIS	3.75
BROOME	4.00	OSWEGO	4.00	ORANGE	3.75
CATTARAUGUS	4.00	OTSEGO	4.00	ROCKLAND	3.625
CAYUGA	4.00	RENSSELAER	4.00	PUTNAM	3.50
CHEMUNG	4.00	SCHENECTADY	4.00	SULLIVAN	3.50
CHENANGO	4.00	SCHOHARIE	4.00	FRANKLIN	3.00
COLUMBIA	4.00	SCHUYLER	4.00	HAMILTON	3.00
CORTLAND	4.00	SENECA	4.00	ONTARIO	3.00
DELAWARE	4.00	STEUBEN	4.00	ST LAWRENCE	3.00
FULTON	4.00	TIOGA	4.00	SARATOGA	3.00
GENESEE	4.00	TOMPKINS	4.00	WARREN	3.00
GREENE	4.00	ULSTER	4.00	WASHINGTON	3.00
HERKIMER	4.00	WAYNE	4.00	WESTCHESTER	3.00

- Twelve counties are subject to the State-imposed Metropolitan Commuter Transportation District surcharge of 0.375 percent. This surcharge is applied in these counties: Dutchess, Nassau, Orange, Putnam, Rockland, Suffolk, Westchester, and the five boroughs of New York City.

Since local sales tax rates can vary widely depending on the county or city in which a sale takes place, consumers often travel to other localities (or even out of state) to take advantage of lower sales tax rates.


Sales Tax Rates by County
Franklin
St. Lawrence
Hamilton
Warren
Washington
Saratoga
Ontario
Tax Rates
3.0%
3.1 - 3.9%
4.0%
4.1 - 5.4%
5.5%

Sales Tax Pre-emption
Ogdensburg
Oswego
Niagara Falls
North Tonawanda
Buffalo
Dunkirk
Port Jervis
Mount Vernon
New Ro
Rye
Plains
Long Beach
Cities that do not pre-empt
Cities that pre-empt

"Temporary" Sales Tax

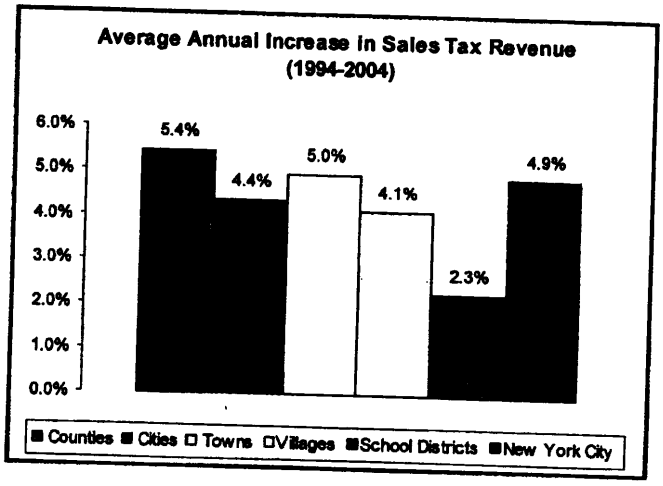
Although current statute permits only a 3 percent local sales tax, nearly two-thirds of New York's counties have sought and obtained State approval to levy an additional 1 percent sales tax (or more) for a total local rate of 4 percent (or higher). Even though these additional tax rates are considered temporary increases which require legislative reauthorization to be continued after two years, virtually all counties have regularly sought State legislative approval of the additional rates. Indeed, as noted in the table, several of these additional tax rates have been renewed for many years. Most will have to be renewed again by November 2007.

This process, which involves action at the local and State level, poses a significant administrative burden and creates uncertainty in budgeting for counties.

ERIE*	1984	SUFFOLK*	2001
CATTARAUGUS	1985	CHEMUNG	2002
ALLEGANY*	1986	CHENANGO	2002
NASSAU*	1991	SENECA	2002
ALBANY	1992	ULSTER	2002
ONEIDA*	1992	DELAWARE	2003
CAYUGA	1992	LIVINGSTON	2003
CORTLAND	1992	MONTGOMERY	2003
STEUBEN	1992	NIAGARA	2003
TOMPKINS	1992	OTSEGO	2003
WYOMING	1992	SCHENECTADY	2003
GREENE	1993	TIOGA	2003
MONROE	1993	WAYNE	2003
ORLEANS	1993	YATES	2003
BROOME	1994	MADISON	2004
GENESEE	1994	ONONDAGA	2004
HERKIMER	1994	OSWEGO	2004
RENSSELAER	1994	SCHOHARIE	2004
COLUMBIA	1995	CHAUTAUQUA*	2005
SCHUYLER	1999	FULTON	2005

Revenue Trends

Statewide, sales tax revenues increased from $6.0 billion to nearly $9.8 billion between 1994 and 2004, an increase of 63 percent or 5.0 percent on an annualized basis.[1]



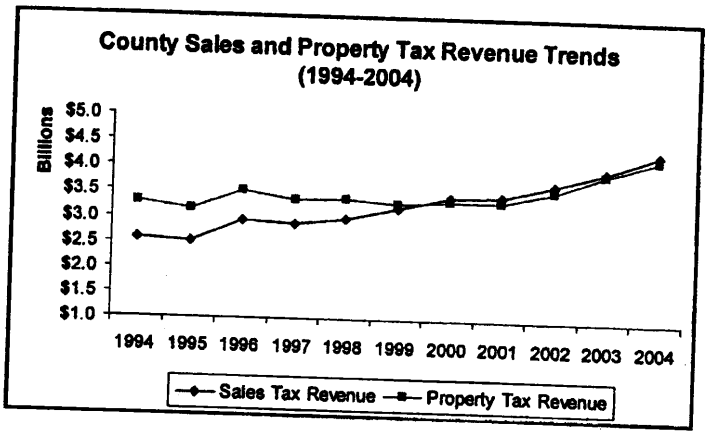
Outside of New York City, county sales tax revenue grew from $2.6 billion in 1994 to $4.3 billion in 2004, an increase of 70 percent or an average annual increase of 5.4 percent. City sales tax revenues increased from $385.8 million to $591.1 million over the same period, a 4.4 percent average annual increase. Town sales tax revenue increased from $307.6 million to $498.8 million, a 5.0 percent average annual increase. Village revenue increased from $73.5 million to $110.1 million, a 4.1 percent average annual increase. School district revenue increased from $203.1 million to $254.8 million, a 2.3 percent average annual increase. New York City sales tax revenues increased from $2.5 billion to $4.0 billion from 1994 to 2004, an increase of 62 percent or an average annual increase of 4.9 percent.

Although sales tax revenues are highly sensitive to economic conditions, they are also influenced by changes in tax law. The introduction of new exemptions or the expansion of the tax base or increases in tax rates can impact the level of sales tax revenues. However, even after adjusting for changes in tax law, statewide sales tax receipts continue to reflect slowed performance, with 4.6 percent growth from 2000 to 2001, a 3.5 percent decline from 2001 to 2002, only 1.4 percent growth from 2002 to 2003, and only 1.0 percent from 2003 to 2004.[2]

In the past, strong sales tax revenues have helped mitigate property tax increases for counties. However, with the economic downturn that began in 2000, revenue growth moderated while expenditures continued to climb. As a result, 20 counties have sought State approval to levy local sales tax rates above the 3 percent statutory limit since 2000. Generally, counties have asked for an additional 1 percent above the 3 percent. While such actions have provided counties with much needed budget relief, they also limit a municipality's future revenue flexibility should other needs arise. Presently, over four-fifths of the State's counties (49 of 57) levy a local tax higher than 3 percent.

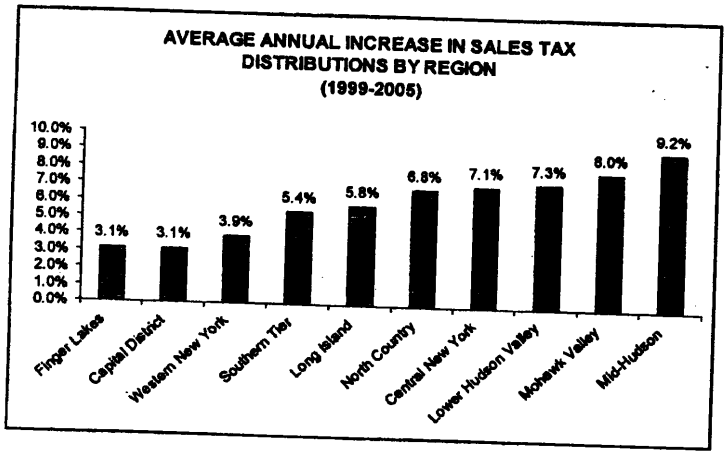
1. These data are based on Annual Financial Report filings and include New York City.
2. New York State Division of the Budget.

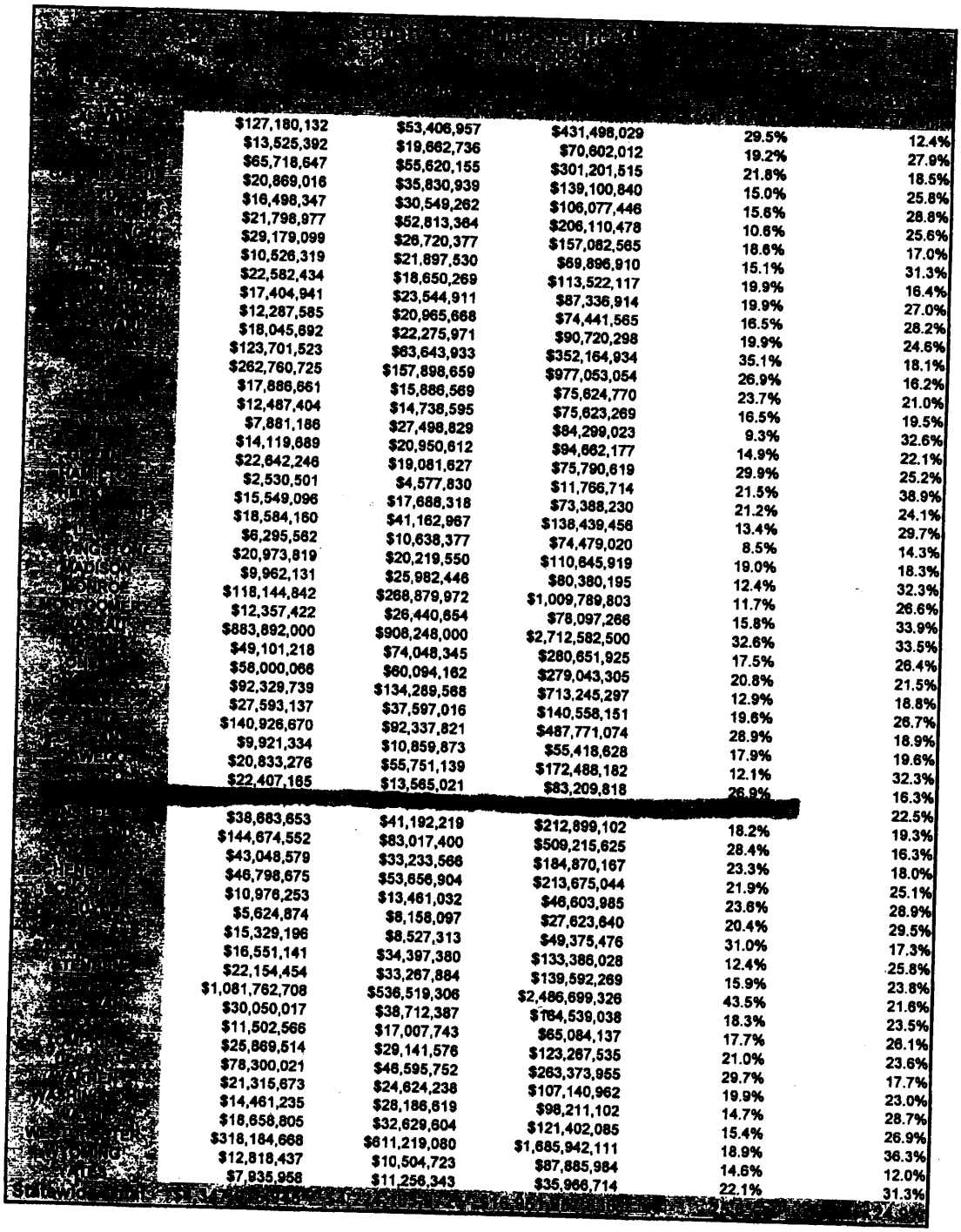
Counties do not always share the additional revenues raised by the increased rate with other municipalities—regardless of any pre-existing sharing agreement related to the base 3 percent. Indeed, six of the 13 counties that specifically address the additional 1 percent in their sharing agreements indicate that all proceeds generated by the additional tax are retained by the county.



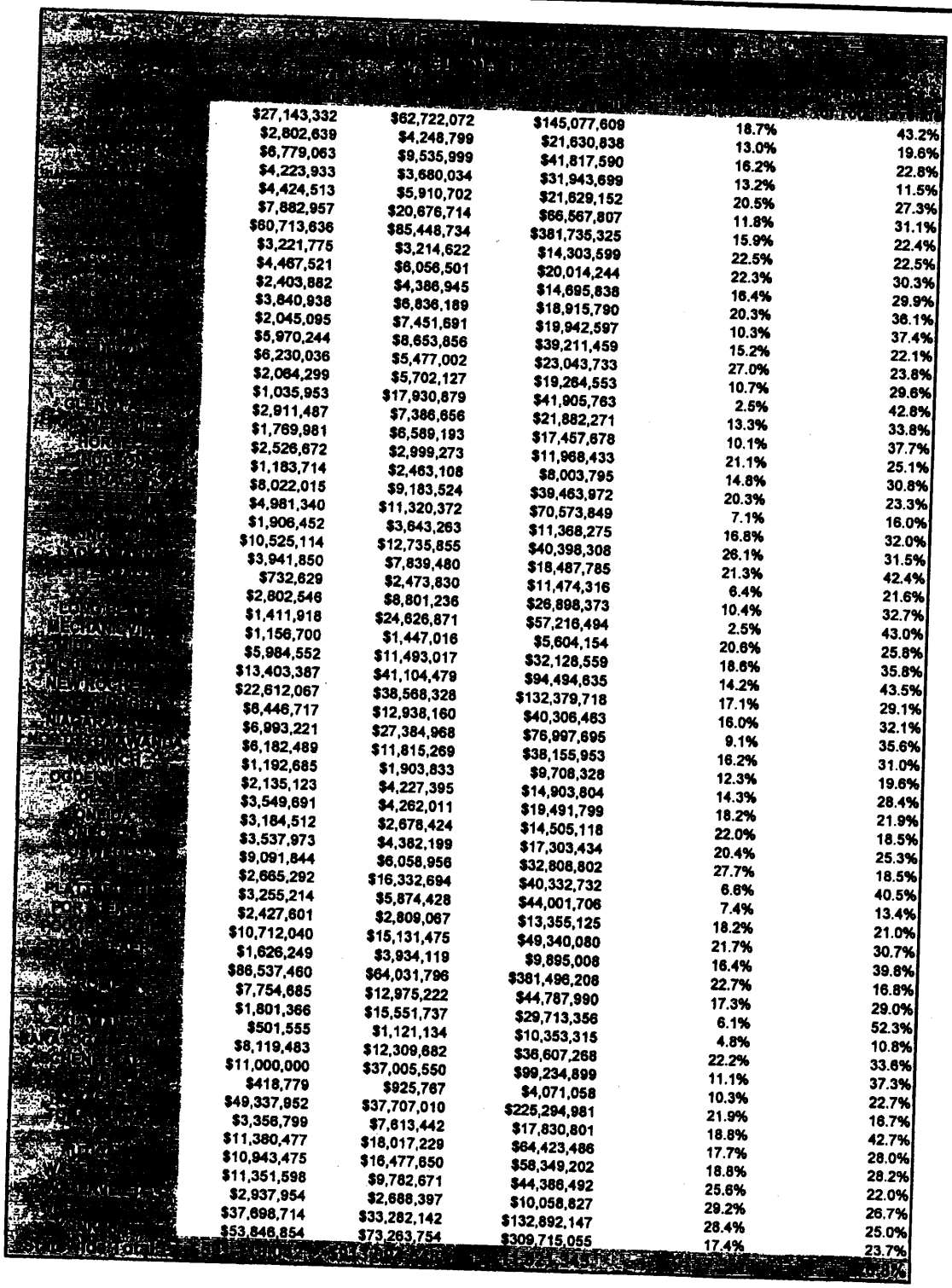
Because so many of the additional 1 percent sales tax authorizations are no longer "temporary," this issue has become a focal point of disagreement between local governments. For example, the State Legislature's extension of the authorization for an additional 1 percent sales tax in Erie County was predicated on the County's agreement to share a portion of this revenue with the City of Buffalo and other local governments.

When aggregated by region, sales tax revenue growth varies widely. As demonstrated in the chart, average annual growth from 1999 - 2005 ranges from a high of 9.2 percent in the Mid-Hudson Valley to 3.1 percent in the Finger Lakes and in the Capital District. Fluctuations in sales tax revenue over time are a function of both general economic condition as well as changes in tax rates. While the Mid-Hudson Valley shows the greatest level of growth, it is important to recognize that four out of the five counties that make up this region instituted rate increases during the time period. In the Capital District, only one out of the eight counties that make up the region instituted a rate increase.





$127,180,132	$53,406,957	$431,498,029	29.5%	12.4%
$13,525,392	$19,662,736	$70,602,012	19.2%	27.9%
$65,718,647	$55,620,155	$301,201,515	21.8%	18.5%
$20,869,016	$35,830,939	$139,100,840	15.0%	25.8%
$16,498,347	$30,549,262	$106,077,446	15.6%	28.8%
$21,798,977	$52,813,364	$206,110,478	10.6%	25.6%
$29,179,099	$26,720,377	$157,082,565	18.6%	17.0%
$10,526,319	$21,897,530	$69,896,910	15.1%	31.3%
$22,582,434	$18,650,269	$113,522,117	19.9%	16.4%
$17,404,941	$23,544,911	$87,336,914	19.9%	27.0%
$12,287,585	$20,965,668	$74,441,565	16.5%	28.2%
$18,045,892	$22,275,971	$90,720,298	19.9%	24.6%
$123,701,523	$63,643,933	$352,164,934	35.1%	18.1%
$262,760,725	$157,898,659	$977,053,054	26.9%	16.2%
$17,886,661	$15,886,569	$75,624,770	23.7%	21.0%
$12,487,404	$14,738,595	$75,623,269	16.5%	19.5%
$7,881,186	$27,498,829	$84,299,023	9.3%	32.6%
$14,119,689	$20,950,612	$94,662,177	14.9%	22.1%
$22,642,246	$19,081,627	$75,790,619	29.9%	25.2%
$2,530,501	$4,577,830	$11,766,714	21.5%	38.9%
$15,549,096	$17,688,318	$73,388,230	21.2%	24.1%
$18,584,160	$41,162,967	$138,439,456	13.4%	29.7%
$6,295,562	$10,638,377	$74,479,020	8.5%	14.3%
$20,973,819	$20,219,550	$110,645,919	19.0%	18.3%
$9,962,131	$25,982,446	$80,380,195	12.4%	32.3%
$118,144,842	$268,879,972	$1,009,789,803	11.7%	26.6%
$12,357,422	$26,440,654	$78,097,266	15.8%	33.9%
$883,892,000	$908,248,000	$2,712,582,500	32.6%	33.5%
$49,101,218	$74,048,345	$280,651,925	17.5%	26.4%
$58,000,066	$60,094,162	$279,043,305	20.8%	21.5%
$92,329,739	$134,289,568	$713,245,297	12.9%	18.8%
$27,593,137	$37,597,016	$140,558,151	19.6%	26.7%
$140,926,670	$92,337,821	$487,771,074	28.9%	18.9%
$9,921,334	$10,859,873	$55,418,628	17.9%	19.6%
$20,833,276	$55,751,139	$172,488,182	12.1%	32.3%
$22,407,165	$13,565,021	$83,209,818	26.9%	16.3%
$38,683,653	$41,192,219	$212,899,102	18.2%	22.5%
$144,674,552	$83,017,400	$509,215,625	28.4%	19.3%
$43,048,579	$33,233,566	$184,870,167	23.3%	16.3%
$46,798,675	$53,656,904	$213,675,044	21.9%	18.0%
$10,976,253	$13,461,032	$46,603,985	23.6%	25.1%
$5,624,874	$8,158,097	$27,623,640	20.4%	28.9%
$15,329,196	$8,527,313	$49,375,476	31.0%	29.5%
$16,551,141	$34,397,380	$133,386,028	12.4%	17.3%
$22,154,454	$33,267,884	$139,592,269	15.9%	25.8%
$1,081,762,708	$536,519,306	$2,486,699,326	43.5%	23.8%
$30,050,017	$38,712,387	$164,539,038	18.3%	21.6%
$11,502,566	$17,007,743	$65,084,137	17.7%	23.5%
$25,869,514	$29,141,576	$123,267,535	21.0%	26.1%
$78,300,021	$46,595,752	$263,373,955	29.7%	23.6%
$21,315,673	$24,624,238	$107,140,962	19.9%	17.7%
$14,461,235	$28,186,619	$98,211,102	14.7%	23.0%
$18,658,805	$32,629,604	$121,402,085	15.4%	28.7%
$318,184,668	$611,219,080	$1,685,942,111	18.9%	26.9%
$12,818,437	$10,504,723	$87,885,984	14.6%	36.3%
$7,935,958	$11,256,343	$35,966,714	22.1%	12.0%
				31.3%



	$27,143,332	$62,722,072	$145,077,609	18.7%	43.2%
	$2,802,639	$4,248,799	$21,630,838	13.0%	19.6%
	$6,779,063	$9,535,999	$41,817,590	16.2%	22.8%
	$4,223,933	$3,680,034	$31,943,699	13.2%	11.5%
	$4,424,513	$5,910,702	$21,629,152	20.5%	27.3%
	$7,882,957	$20,676,714	$66,567,807	11.8%	31.1%
	$60,713,636	$85,448,734	$381,735,325	15.9%	22.4%
	$3,221,775	$3,214,622	$14,303,599	22.5%	22.5%
	$4,467,521	$6,056,501	$20,014,244	22.3%	30.3%
	$2,403,882	$4,386,945	$14,695,838	16.4%	29.9%
	$3,840,938	$6,836,189	$18,915,790	20.3%	36.1%
	$2,045,095	$7,451,691	$19,942,597	10.3%	37.4%
	$5,970,244	$8,653,856	$39,211,459	15.2%	22.1%
	$6,230,036	$5,477,002	$23,043,733	27.0%	23.8%
	$2,064,299	$5,702,127	$19,264,553	10.7%	29.6%
	$1,035,953	$17,930,879	$41,905,763	2.5%	42.8%
	$2,911,487	$7,386,656	$21,882,271	13.3%	33.8%
	$1,769,981	$6,589,193	$17,457,678	10.1%	37.7%
	$2,526,672	$2,999,273	$11,968,433	21.1%	25.1%
	$1,183,714	$2,463,108	$8,003,795	14.8%	30.8%
	$8,022,015	$9,183,524	$39,463,972	20.3%	23.3%
	$4,981,340	$11,320,372	$70,573,849	7.1%	16.0%
	$1,906,452	$3,643,263	$11,368,275	16.8%	32.0%
	$10,525,114	$12,735,855	$40,398,308	26.1%	31.5%
	$3,941,850	$7,839,480	$18,487,785	21.3%	42.4%
	$732,629	$2,473,830	$11,474,316	6.4%	21.6%
	$2,802,546	$8,801,236	$26,898,373	10.4%	32.7%
	$1,411,918	$24,626,871	$57,216,494	2.5%	43.0%
	$1,156,700	$1,447,016	$5,604,154	20.6%	25.8%
	$5,984,552	$11,493,017	$32,128,559	18.6%	35.8%
	$13,403,387	$41,104,479	$94,494,635	14.2%	43.5%
	$22,612,067	$38,568,328	$132,379,718	17.1%	29.1%
	$8,446,717	$12,938,160	$40,306,463	16.0%	32.1%
	$6,993,221	$27,384,968	$76,997,695	9.1%	35.6%
	$6,182,489	$11,815,269	$38,155,953	16.2%	31.0%
	$1,192,685	$1,903,833	$9,708,328	12.3%	19.6%
	$2,135,123	$4,227,395	$14,903,804	14.3%	28.4%
	$3,549,691	$4,262,011	$19,491,799	18.2%	21.9%
	$3,184,512	$2,678,424	$14,505,118	22.0%	18.5%
	$3,537,973	$4,382,199	$17,303,434	20.4%	25.3%
	$9,091,844	$6,058,956	$32,808,802	27.7%	18.5%
	$2,665,292	$16,332,694	$40,332,732	6.6%	40.5%
	$3,255,214	$5,874,428	$44,001,706	7.4%	13.4%
	$2,427,601	$2,809,067	$13,355,125	18.2%	21.0%
	$10,712,040	$15,131,475	$49,340,080	21.7%	30.7%
	$1,626,249	$3,934,119	$9,895,008	16.4%	39.8%
	$86,537,460	$64,031,796	$381,496,206	22.7%	16.8%
	$7,754,685	$12,975,222	$44,787,990	17.3%	29.0%
	$1,801,366	$15,551,737	$29,713,356	6.1%	52.3%
	$501,555	$1,121,134	$10,353,315	4.8%	10.8%
	$8,119,483	$12,309,682	$36,607,268	22.2%	33.6%
	$11,000,000	$37,005,550	$99,234,899	11.1%	37.3%
	$418,779	$925,767	$4,071,058	10.3%	22.7%
	$49,337,952	$37,707,010	$225,294,981	21.9%	16.7%
	$3,356,799	$7,613,442	$17,830,801	18.8%	42.7%
	$11,380,477	$18,017,229	$64,423,486	17.7%	28.0%
	$10,943,475	$16,477,650	$58,349,202	18.8%	28.2%
	$11,351,598	$9,782,671	$44,386,492	25.6%	22.0%
	$2,937,954	$2,688,397	$10,058,827	29.2%	26.7%
	$37,698,714	$33,282,142	$132,892,147	28.4%	25.0%
	$53,846,854	$73,263,754	$309,715,055	17.4%	23.7%

Sales Tax Sharing

In general, counties may keep all of the proceeds from a sales tax or they may elect to share a portion with school districts, cities and towns within the county. Counties distribute sales tax proceeds in accordance with statute or sharing agreements approved by the county and the cities within the county. Sales tax agreements are required when county sales taxes are to be allocated between the cities in a county, and the area of the county outside the cities, on a basis other than population. Any sales tax distribution agreement must be approved by the Office of the State Comptroller (OSC).

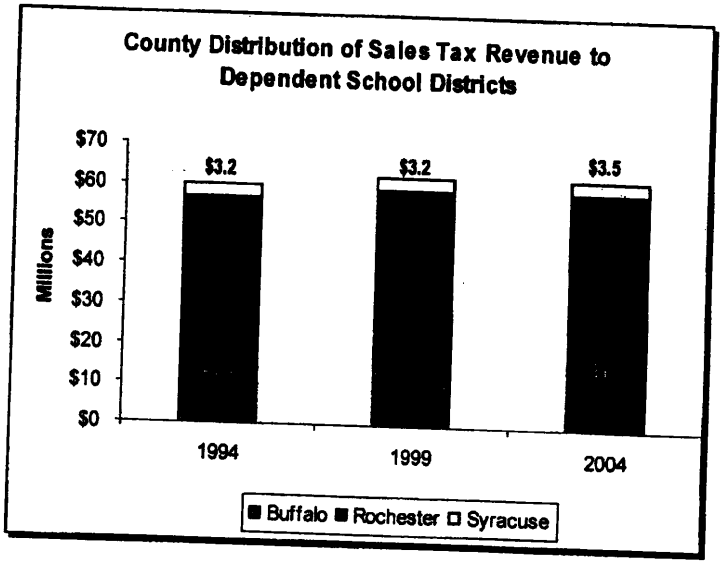
For those sales tax agreements that deviate from a population-based distribution formula, OSC generally reviews the distribution agreement language, verifies that the legal authorizations to execute the agreement are in order, and determines that the proposed distribution formula is "administratively workable," i.e., that it is structured in a manner that can be audited. Any modifications, renewals or extensions of these agreements are also subject to approval by OSC.

The majority of counties (43 out of 57), pursuant to statute or agreement, share sales taxes with other local governments located within their boundaries. However, the proportion of sales taxes retained by each county in accordance with these agreements varies greatly, ranging from a low of 31 percent in Monroe County to a high of 98 percent in Rockland County. The remaining 14 counties in the State retain 100 percent of the sales tax revenues generated within their borders.

A number of these sales tax sharing agreements distinguish between the "first 3 percent" and any additional tax individual counties have been authorized to levy. In some cases, counties share only those proceeds from the first 3 percent. In other cases, counties apply one sharing formula to the first 3 percent and a different formula to the additional tax. Counties that ask for authorization to impose an additional tax may do so with the intention of directing all the proceeds towards specific county expenditures. In recent years, Medicaid has been a popular program for this type of earmarking.

Generally, school districts that receive any distribution must be paid in cash. Cities and towns can receive their money in one of three ways: as an offset to first reduce county taxes levied in a city or town; in cash, at the option of the city or town; or a combination of the two. If a county shares sales tax revenues with its cities and towns, then a village can elect to receive direct cash payment of its proportionate amount of the town share.

Those cities that have exercised their right to pre-empt the county and impose their own sales tax retain all of those revenues for their own use. Presently, 22 cities levy their own sales tax, with rates ranging from 1.5 percent to 4 percent. In 2004, cities received $591 million in sales tax revenue, towns $499 million, villages $110 million and school districts $255 million.



In three of the "Big Four" dependent city school districts (Buffalo, Rochester and Syracuse), sales tax revenue distributions go from the county via the city to the school district – after the city approves the annual school budget. In 2004, the Buffalo school district received the greatest amount of sales tax money at $30.1 million, followed by Rochester at $28.7 million. Syracuse received the least at $3.5 million. For school districts located wholly in a city that imposes its own sales tax (Yonkers) there is no county distribution. The same holds true for New York City.

Because many sales tax sharing agreements are based on population, cities which have lost population are particularly vulnerable to sales tax revenue losses. A recent report from OSC describes how most of New York's cities lost population from 1970 to 2000.[3] In 1970, 2.8 million residents lived within the boundaries of the State's 61 cities (excluding NYC), but only 2.3 million resided in these same cities as of 2000—a decrease of 20 percent. At the same time, the population residing in towns increased by 16 percent.

The State's large upstate cities have been particularly hard hit. For example, the City of Buffalo lost approximately half of its population from 1950 to 2000. This population loss is the fourth highest among large cities nationwide. Rochester (34 percent decline) and Syracuse (33 percent decline) experienced significant population reductions for the same period. Like Buffalo, these cities have had five consecutive decades of declining population levels. To address this, certain measures have been negotiated in some sales tax sharing agreements, including hold-harmless provisions and minimum guarantees.

As a group, the Big Four cities of Buffalo, Rochester, Syracuse and Yonkers experienced sales tax revenue growth at an average of 3.1 percent each year from 1990 to 2004. This significantly lags the growth for towns which, as a class, experienced average annual growth of 5.8 percent over the same time period. The average annual growth rate for all other cities (excluding the Big Four cities and NYC) was also 3.1 percent from 1990 to 2004.

Specific Local Sharing Agreements

In 2005, OSC staff surveyed county officials with regard to sales tax agreements currently in effect. These survey responses are included in Section 2. Generally:

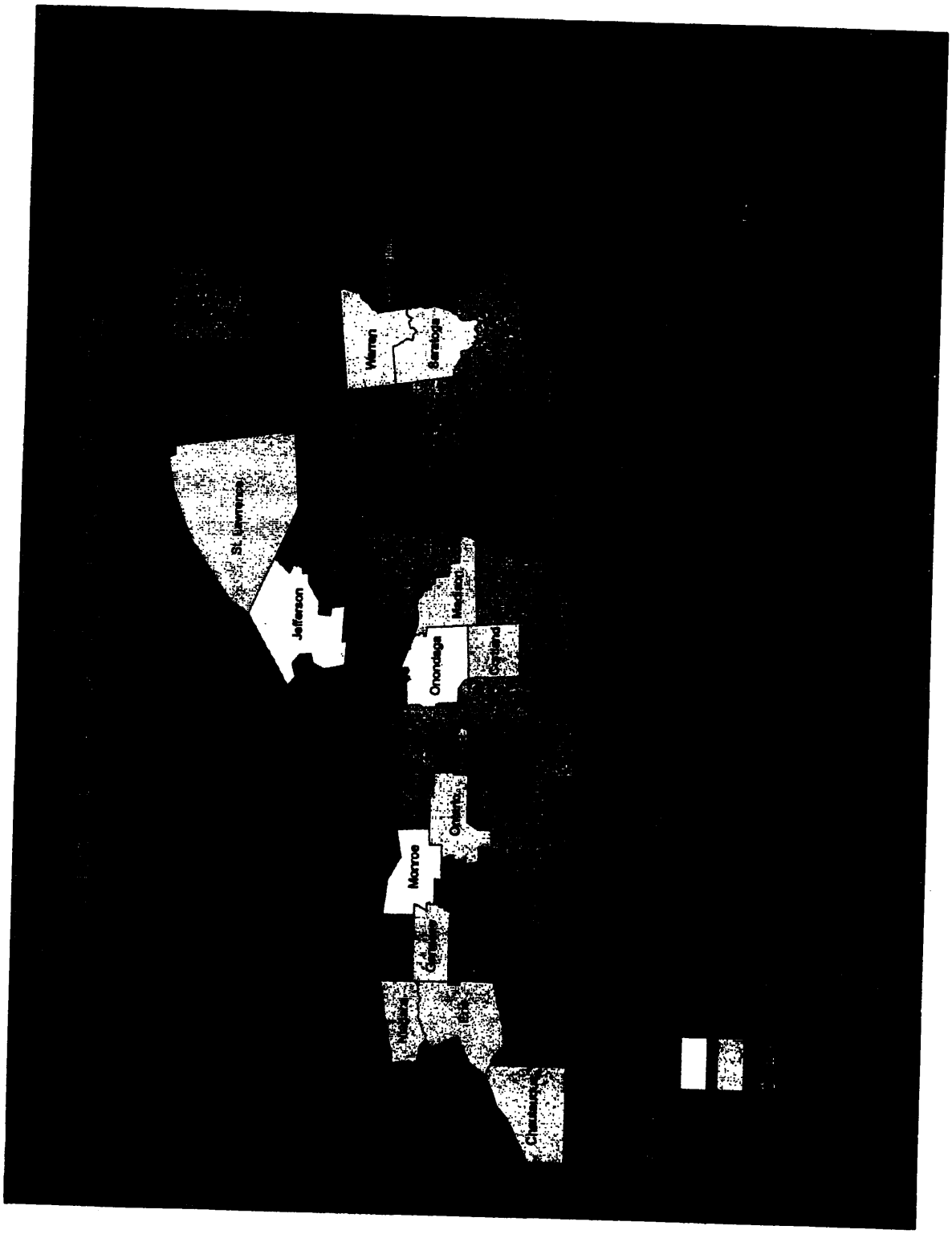
- Forty-three counties have sharing agreements: Albany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Dutchess, Erie, Fulton, Genesee, Herkimer, Jefferson, Livingston, Madison, Monroe, Montgomery, Nassau, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Rensselaer, Rockland, St. Lawrence, Saratoga, Schenectady, Schoharie, Schulyer, Steuben, Tioga, Tompkins, Ulster, Warren, Wayne and Westchester.

- Fourteen counties do not have sharing agreements: Allegany, Delaware, Essex, Franklin, Greene, Hamilton, Lewis, Putnam, Seneca, Suffolk, Sullivan, Washington, Wyoming and Yates.

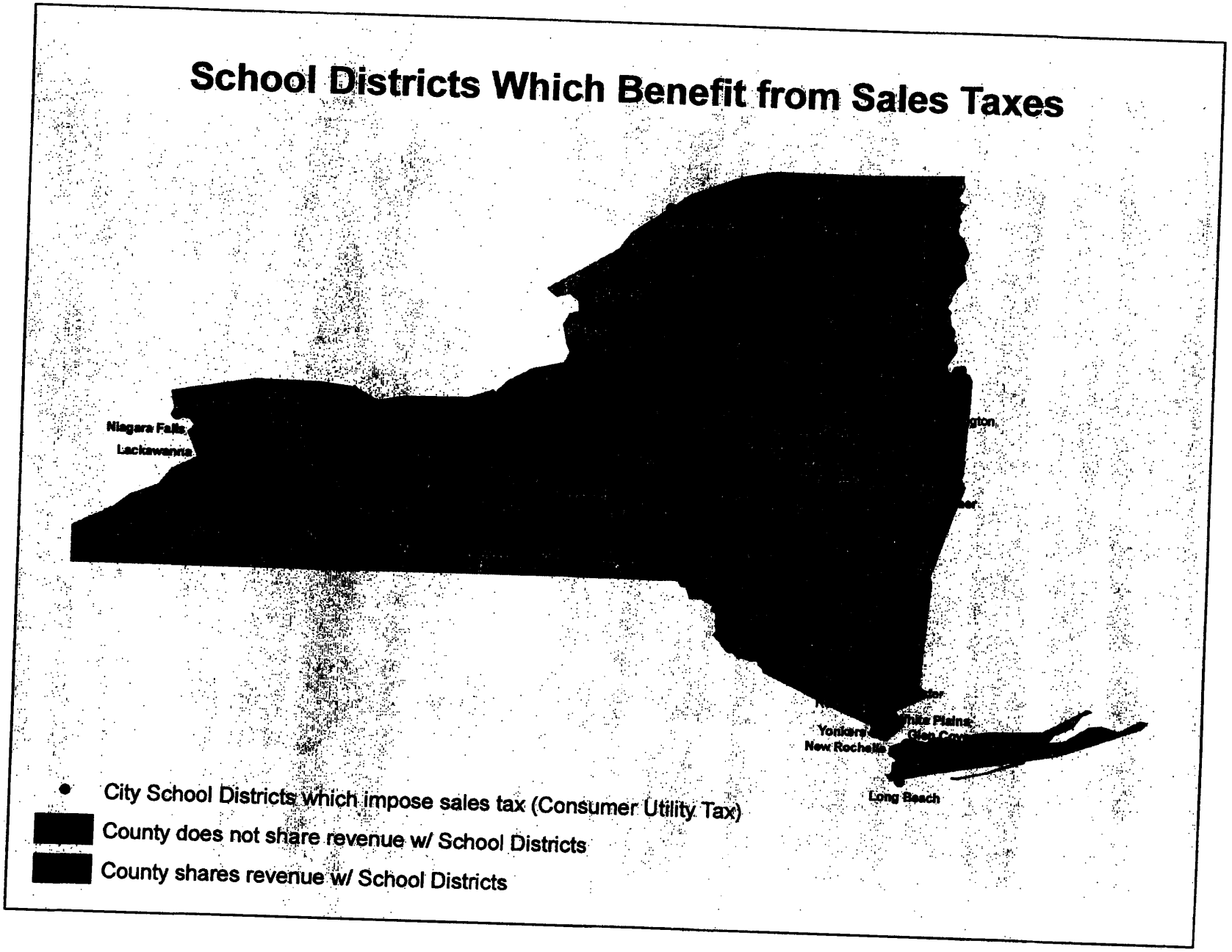
- Five counties include school districts in their distribution agreements: Erie, Monroe, Onondaga, Wayne and Westchester.

- A number of counties earmark sales tax revenues for certain expenses such as Medicaid, capital projects and debt service.

3. "Population Trends in New York State's Cities." Office of the State Comptroller. December 2004.


Warren
Saratoga
St. Lawrence
Jefferson
Onondaga
Monroe

$13,525,392	$13,525,392	100%
$18,045,692	$18,045,692	100%
$17,886,661	$17,886,661	100%
$12,481,825	$12,487,404	100%
$22,642,246	$22,642,246	100%
$2,530,501	$2,530,501	100%
$6,295,562	$6,295,562	100%
$36,716,813	$36,716,813	100%
$15,329,196	$15,329,196	100%
$30,050,017	$30,050,017	100%
$1,081,762,708	$1,081,762,708	100%
$14,461,235	$14,461,235	100%
$12,818,437	$12,818,437	100%
$7,935,958	$7,935,958	100%
$147,829,374	$144,674,552	98%
$11,525,066	$10,976,253	95%
$22,065,037	$20,973,819	95%
$934,445,434	$883,892,000	95%
$22,768,521	$20,833,276	92%
$11,338,949	$9,921,334	87%
$91,463,758	$78,300,021	86%
$147,933,117	$123,701,523	84%
$398,111,009	$318,184,668	80%
$181,933,402	$140,926,670	77%
$29,367,301	$22,407,165	76%
$7,499,831	$5,624,874	75%
$15,609,610	$11,502,566	74%
$29,043,982	$20,869,016	72%
$22,030,108	$15,549,096	71%
$25,092,773	$17,404,941	69%
$57,788,846	$38,683,653	67%
$15,784,474	$10,526,319	67%
$98,858,189	$65,718,647	66%
$39,144,737	$25,869,514	66%
$88,436,683	$58,000,066	66%
$12,054,034	$7,881,186	65%
$34,498,595	$22,154,454	64%
$29,774,426	$18,658,805	63%
$46,686,558	$29,179,099	63%
$36,386,153	$22,582,434	62%
$26,728,953	$16,498,347	62%
$76,023,891	$46,798,675	62%
$20,544,211	$12,357,422	60%
$211,872,307	$127,180,132	60%
$85,179,754	$49,101,218	58%
$21,936,845	$12,287,585	56%
$17,833,536	$9,962,131	56%
$49,901,769	$27,593,137	55%
$481,872,848	$262,760,725	55%
$40,147,300	$21,315,673	53%
$85,153,719	$43,048,579	51%
$28,233,468	$14,119,689	50%
$33,102,281	$16,551,141	50%
$43,602,638	$21,798,977	50%
$44,103,310	$18,584,160	42%
$220,729,641	$92,329,739	42%
$375,173,108	$118,144,842	31%


School Districts Which Benefit from Sales Taxes
Niagara Falls
Lackawanna
Yonkers
New Rochelle
Long Beach
City School Districts which impose sales tax (Consumer Utility Tax)
County does not share revenue w/ School Districts
County shares revenue w/ School Districts

Sales Taxes in a National Context

Tax Burden

Recently released data on state and local tax burdens documents how New York's tax burden is higher in comparison to national averages. For example, looking at New York's tax to income ratios, state taxes alone are virtually identical to the national average ($6.39 per $100 of personal income in New York in 2003 vs. $6.35 nationally), whereas local taxes are nearly twice the national figure ($6.74 per $100 of personal income in New York in 2003 vs. $3.77 nationally). Among the 50 states, New York ranks first in local taxes, fifth in local property taxes and third in local sales taxes.[4] Although the combined state-local sales tax rate varies considerably among counties in New York, it averages 8.25 percent, compared to a national average rate of 5.93 percent.[5]

Looking just at the sales tax, New York has one of the highest combined state/local sales tax rates in the nation compared to other states (only Tennessee, Louisiana and Washington are higher), and it is the local portion that drives up New York's overall rate.[6] However, local sales taxes in New York State have long been linked to the existence of a large county share of Medicaid costs, whereas most states do not require significant local contributions toward Medicaid.

One way to address the high sales tax burden in New York State, as well as the regressive nature of the sales tax, is to exempt certain parts of the sales tax base from taxation. For example, the states of New Jersey and Massachusetts allow for year-round sales tax exemptions on clothing and footwear. Until recently, New York allowed for only two one-week periods of clothing and footwear exemptions and was at a competitive disadvantage in attracting retail activity in this sector. The enacted 2006-07 State Budget includes a permanent exemption to these items. The exemption applies to the State sales tax of 4 percent and to the local sales tax at local option.

Internet Sales

Competition from adjacent states, and from internet sales, is a serious tax policy issue in New York State. Each year, State and local sales tax revenues are lost to the growing popularity of e-commerce transactions (i.e., internet purchases), where sales tax is often not collected. As this form of commerce grows, so will the amount of uncollected sales tax revenue.[7]

Estimates of uncollected sales tax revenues vary widely due to varying assumptions related to compliance rates, definitions of e-commerce and measurements of e-commerce sales. A 2000 report from the General Accounting Office estimated state and local sales tax losses nationwide for 2000 between $0.3 and $3.8 billion, or 2 percent of projected sales tax revenue.[8] Projected losses

4. *2006-07 New York State Executive Budget -- Economic & Revenue Outlook* (p. 369).
5. *2006-07 New York State Executive Budget -- Economic & Revenue Outlook* (p. 361).
6. *The Sales Tax Clearinghouse.*
7. Although individuals making internet purchases are required to pay the sales and use tax directly to the Department of Taxation and Finance, few actually do. For further discussion on this issue, go to http://www.tax.state.ny.us/pdf/publications/sales/pub774_206.pdf
8. "Sales Taxes: Electronic Commerce Growth Presents Challenges; Revenue Losses Are Uncertain." General Accounting Office. June 2000.

for 2003 were estimated between $1.0 and $12.4 billion, or 5 percent of projected sales tax revenue. More recent estimates have been released by various interest groups, including one which cites sales tax losses on the order of $46 billion by 2006.

There have been attempts to address this issue on a national level. One such effort is the Streamlined Sales Tax Project which was launched in 2000 by representatives from various state/local governments and businesses. The group was charged with developing a set of recommendations for terms of an interstate agreement that would streamline and simplify sales and use tax systems. The long-term goal of the project is to reduce the burden of collection for all sellers and to create a voluntary collection system for remote sellers who have no requirement to collect and remit sales taxes. Although 44 states are participating in this workgroup, very few have gone so far as to change their sales tax laws to match the proposed agreement.

National Sales Tax

A number of proposals creating a national sales tax have been advanced and debated at various times in Congress, though none have garnered the broad support necessary for passage. Although the proposals that have been forwarded on this issue vary in detail, most would involve replacing federal personal income taxes with a national retail sales tax. Other proposals also seek to expand the tax base to include taxing health care, home purchases and vehicle purchases.

Given that the sales tax is regressive by nature, most tax analysts generally agree that a national sales tax would "raise taxes substantially on most Americans and cut taxes substantially on the very well-off."[9] Moreover, studies have suggested that a national sales tax rate would have to reach 50-60 percent in order to replace the federal taxes. State governments would also have their ability to control the taxable base of sales.

9. "The Effects of Replacing Most Federal Taxes with a National Sales Tax: A State-by-State Distributional Analysis." Institute on Taxation and Economic Policy. September 2004.

Section 2
Technical Discussion of the Sales Tax

Local sales and use taxes in New York State were first authorized in New York City in 1934 to enable the City to raise additional revenues during the Depression.[10] Authorization was later extended to other cities and counties in 1947.[11] Towns and villages were excluded.

There are two components to sales tax revenue: the rate and the base (all the items or activities subject to the tax). Vendors are responsible for collecting both the State and local sales tax at the point of sale. Vendors then remit the collections to the NYS Department of Taxation and Finance either monthly, quarterly or annually, depending on the size of their revenue collections.

The Tax Rate

A statewide sales and compensating use tax was enacted in 1965 at the rate of 2 percent. This statewide tax rate was increased to 3 percent in 1969, to 4 percent in 1971, to 4.25 percent in 2003 and then lowered to 4 percent in 2005.

Counties and cities are authorized by Article 29 of the New York State Tax Law to impose a tax on the sale of certain goods and services at a rate of up to 3 percent. Although the Tax Law generally only allows for up to a 3 percent local rate, counties may increase their rates above the 3 percent with approval from the State Legislature. Currently, local sales tax rates range between 3 percent and 5.5 percent and are added to the statewide sales tax rate of 4 percent. Accordingly, combined rates range from 7 percent to as much as 9.5 percent.

Although towns and villages are not allowed to impose sales taxes, these entities often share in county sales tax proceeds in accordance with local sales tax agreements. Presently, 43 counties share proceeds with other municipalities within their respective boundaries.

The Tax Base

With a few minor exceptions, the State and local sales tax bases in New York are the same. The Tax Law describes the goods and services which are subject to the sales tax, including the following:

- Retail sales of tangible personal property
- Certain services
- Consumer utility billings
- Certain food and drink
- Hotel room occupancy
- Certain admissions, charges and club dues

The items listed above are sometimes referred to as the "general sales tax package." If a municipality chooses to impose the general sales tax, it must impose the tax on all the categories at a uniform rate.

10. Chapter 873, Laws of 1934.
11. Chapter 278, Laws of 1947.

The last four categories listed on the previous page may be taxed selectively by a municipality that does not impose the general sales tax. Municipalities that apply sales tax in this manner are, in fact, applying a segmented tax. At this time, only five cities impose segmented taxes: Long Beach, Lockport, Port Jervis, Newburgh and Niagara Falls.

Tangible Personal Property

According to the New York State Department of Taxation and Finance, tangible personal property is described as "any physical personal property that has a material existence and is perceptible to the human senses." Some examples include:

- Furniture, appliances and lighting fixtures
- Clothing and footwear
- Machinery and equipment, parts, tools and supplies
- Computers and software
- Motor vehicles
- Boats and yachts
- Fuels
- Candy and confections
- Bottled water, soda and beer
- Cigarettes and tobacco products
- Cosmetics and toiletries
- Jewelry

Services

Some services are also subject to the sales tax; they are generally referred to as "specifically enumerated services" and include:

- Provision of certain information services
- Rental of safe deposit boxes, vaults or similar storage facilities
- Provision of parking, garaging or storing services for motor vehicles
- Interior decorating or design
- Provision of protective or detective services
- Entertainment or information services provided by means of telephony or telegraphy

Consumer Utility Taxes

The Consumer Utility Tax is levied as a percentage (up to a maximum of 3 percent) of a consumer's utility bill. Counties and cities may levy this tax as part of a county/city general sales tax, at a rate different from the county/city general sales tax rate or separately in lieu of imposing a general sales tax.

School districts with territory in cities with populations of 125,000 or less may impose the Consumer Utility Tax as well. This tax may be levied in addition to a similar city or county tax, or a city or county general sales tax.

As a result, city school districts have legal authorization to impose a Consumer Utility Tax up to a maximum of 3 percent, exclusive of county and city rates. This utility tax, which is part of the general sales tax, may actually be imposed up to a combined ceiling of 6 percent. This is the only instance where the local combined sales tax rate may exceed 3 percent, as statute prohibits such tax pyramiding by counties and cities.

Twenty-one city school districts imposed the Consumer Utility Tax during the 2004 State fiscal year including: Albany, Batavia, Cohoes, Glen Cove, Gloversville, Hornell, Hudson, Johnstown, Lackawanna, Long Beach, Middletown, New Rochelle, Niagara Falls, Ogdensburg, Rensselaer, Schenectady, Troy, Utica, Watertown, Watervliet and White Plains. These districts retain the sales tax revenues for their own use.

In 2005, nearly $34 million was collected in Consumer Utility Taxes, including $1.3 million by cities and $32.7 million by city school districts.[12]

Food and Drink

Generally, prepared meals and beverages sold in restaurants, taverns or similar establishments are subject to sales and use tax. However, food sold in grocery stores is generally exempt.

Hotel Room Occupancy

This category includes rent for occupancy of a room in a hotel or motel, including bed and breakfasts, boarding houses and guest houses.

Certain Admissions, Charges and Clubs

Sales tax is applied on admission charges to athletic contests, shows and entertainment events, cabarets and clubs and on dues for social and athletic clubs.

Exempt Items

New York State Tax Law exempts certain items from the sales tax, including the following items:[13]

- Certain purchases for resale
- Sales to or by Federal and New York State governments, charitable organizations and certain other exempt organizations

12. NYS Department of Taxation and Finance *2004-2005 New York State Tax Collections Statistical Summaries and Historical Tables.* October 2005.

13. Additional items exempt from the sales tax may be found at the New York State Tax and Finance website.

- Sales of most food for consumption at home
- Sales of prescription and non-prescription medications
- Most services such as medical care, transportation, education and personal and professional services
- Fuels and utility services used in manufacturing

State Clothing Exemption

In March 2000, clothing and footwear items priced under $110 were exempted from State sales and use tax. Counties and cities were given the option of exempting these items from the local portion of the sales tax as well. This exemption continued until the 2003-04 legislative session when the State Legislature suspended the permanent exemption and replaced it with two temporary "sales tax holidays." These holidays were designated for two specific one-week periods with local option and applied to clothing and footwear under $110 per item. Localities could opt out of participating in the holidays. In 2005, the following counties opted out of the exemption period: Lewis, Nassau, Orange, Putnam and Westchester. The following cities also chose not to participate: Fulton, Mount Vernon, New Rochelle, Utica, White Plains and Yonkers.

The recently enacted 2006-07 State Budget includes a permanent exemption to these items. The exemption applies to the State sales tax of 4 percent and to the local sales tax at local option.

Empire Zones

There are two sales tax credit and exemption programs associated with businesses located in designated Empire Zones, each of which can be implemented at local option. Generally, these programs provide a sales tax credit or refund for sales tax paid on building materials purchased to construct, expand or rehabilitate commercial/industrial property located in a zone. They also provide sales tax exemptions for businesses that are not only located in a zone but that are "certified" under Article 18-B of the General Municipal Law and that meet certain tests regarding employment in the zone and in the rest of the State.

Administration

The NYS Department of Taxation and Finance is responsible for the administration and collection of sales tax proceeds. The State Comptroller's Office is responsible for processing payments of sales tax proceeds to counties and cities and for approving sales tax agreements between counties and cities, where the proceeds are distributed on any basis other than population.

Sales tax administration is a complex undertaking. Vendors (retail stores, for the most part) are responsible for collecting the tax at the point of sale. There is a substantial effort associated with bookkeeping and filing tax returns. Accordingly, vendors are allowed to retain a small portion of the sales tax they collect. This arrangement serves both as partial compensation for the administrative costs of collecting and remitting the tax and as an incentive for timely filing.[14]

14. NYS Division of Budget 2005-06 Executive Budget, Financial Plan.

In the 2005 State fiscal year, $21.4 billion in sales tax revenue was collected by the Department of Tax and Finance. Of that amount, $10.8 billion was sent to localities and the balance was retained by the State.

Depending on how much sales tax is collected, vendors must remit revenues either annually, quarterly or monthly. Vendors collecting the largest amount of revenue are required to remit monthly, while those collecting the least amount remit annually. Although only 6 percent of vendors are required to make monthly remittances, they account for 80 percent of all sales tax revenue in New York.[15] Presently, there are about 640,000 registered vendors in the State. Of these, approximately 284,000 are required to make annual remittances, about 268,000 are required to make quarterly remittances and about 35,700 are required to make monthly remittances.

Vendors are also required to file sales tax returns quarterly. These returns contain information about the vendors' taxable sales for the period, including the location of the sales. Information on the location of each sale is important because it dictates where the local portion of the sales tax will be sent. In New York, the retail sales tax is a destination tax. The point of delivery or the point at which possession is transferred by the vendor to the purchaser determines the rate of local sales tax to be collected. Sales delivered outside New York State are exempt from tax.[16]

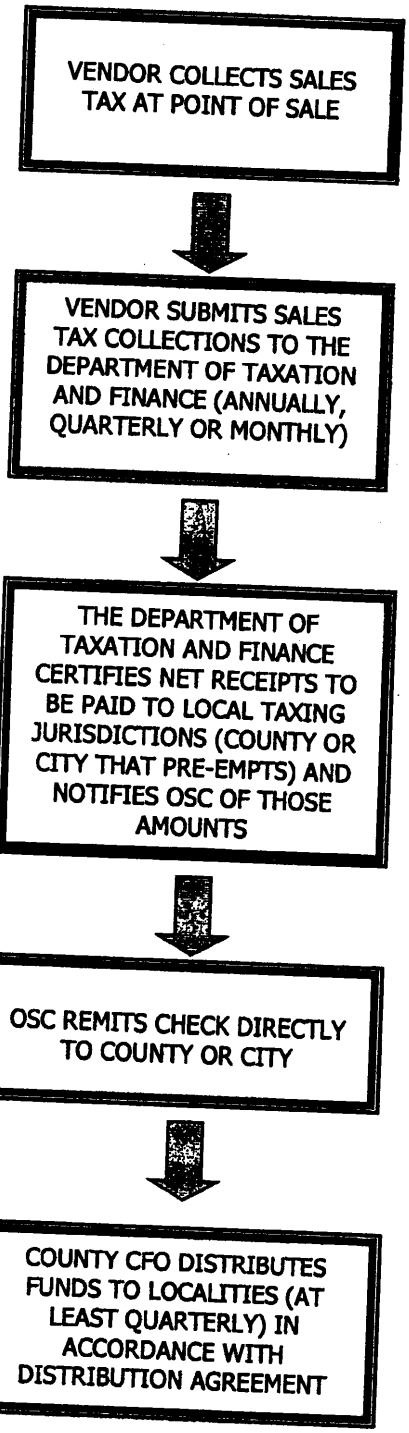
Because sales tax return information is not available until the end of a quarter, the Tax Department's payments to counties and cities (which typically occur on the 4th and 12th of each month)[17] are estimates based on the vendor's prior year sales tax return for that quarter.

Once the return information becomes available, the Department compares how much the county or city should have received against what the county or city did receive. The final payment to the county or city for the quarter is then adjusted in such a way that, when this amount is combined with the earlier estimated amount, the total amount paid to each county or city in the quarter equals the amount that should have been paid.

A variety of administrative factors affect sales tax collections and payment patterns. As mentioned above, not all vendors are required to file monthly. Because some vendors file quarterly, the months of March, June, September and December reflect higher collection figures. Additionally, transactions to correct previous filings (especially those related to large vendors) have an effect on collections once the correction is processed. These fluctuations will ultimately have an impact on cash flow for local governments.

15. NYS Department of Taxation and Finance.
16. NYS Department of Taxation and Finance.
17. In December and June, the Department also processes a third distribution.

Sales Tax Distribution Process



Significant Sales Tax Legislation

The significant statutory changes to the sales tax since 1994 are summarized below.

Subject	Description	Effective Date
Legislation Enacted in 1994		
Racehorses	Exempted certain registered racehorses used in authorized pari-mutuel events.	June 1, 1994
Vendor Allowance	Enacted the vendor allowance credit for timely filed quarterly or annual returns at the rate of 1.5 percent of State sales tax collected up to a maximum of $100 per return.	September 1, 1994
Legislation Enacted in 1995		
Homeowners' Associations	Exempted dues paid to homeowners' associations operating social or athletic facilities for their members.	September 1, 1995
Meteorological Services	Exempted the sale of meteorological information services.	September 1, 1995
Legislation Enacted in 1996		
Clothing and Footwear	Exempted clothing and footwear priced under $500 for the one-week period of January 18-24, 1997.	January 18-24, 1997
Promotional Materials	Expanded the exemption for certain printed promotional materials distributed by mail to customers in New York State.	March 1, 1997
Legislation Enacted in 1997		
Buses	Provided an exemption for buses used to transport persons for hire, and related parts and services.	December 1, 1997
Clothing and Footwear	Exempted clothing priced under $100 for the one-week periods of September 1-7, 1997, and September 1-7, 1998.	September 1-7, 1997 September 1-7, 1998
	Permanently exempted clothing priced under $100.	December 1, 1999
Homeowner Association Parking	Exempted parking services sold by a homeowners' association to its members.	December 1, 1997
Various Coin-Operated Devices	Raised the exemption threshold for bulk vending machine sales to 50 cents from 25 cents, exempted coin-operated car washes, exempted coin-operated photocopying costing under 50 cents, and exempted certain hot food and beverages sold through vending machines.	December 1, 1997
Vendor Allowance	Increased the sales tax vendor allowance from 1.5 percent to 3.5 percent of State tax collected, capped at $150 per quarter.	March 1, 1999
Legislation Enacted in 1998		
Clothing and Footwear	Included footwear in the September 1-7, 1998, temporary clothing exemption and raised exemption threshold to $500 from $100.	September 1-7, 1998
	Exempted clothing and footwear priced under $500 during the January 17-24, 1999, period.	January 17-24, 1999
	Included footwear in the permanent clothing exemption beginning on December 1, 1999, and raised exemption threshold from $100 to $110.	December 1, 1999
Coin Telephones	Increased the exemption threshold for coin-operated telephone calls to 25 cents from 10 cents.	September 1, 1998
College Textbooks	Exempted textbooks purchased by college students that are required for their courses.	June 1, 1998
Computer Hardware	Exempted computer system hardware used to design and develop computer software for sale.	June 1, 1998
Internet Access Service	Codified State policy of exempting charges for Internet access services.	February 1, 1997
Materialmen	Allowed certain materialmen (i.e., building materials suppliers) to remit sales tax returns on either a cash or an accrual basis.	June 1, 1999
Telephone Central Office Equipment	Expanded existing exemption for telephone central office equipment to include such equipment or apparatus used in amplifying, receiving, processing, transmitting, and re-transmitting telephone signals.	September 1, 1998

Source: 2006-07 NYS Executive Budget - Economic and Revenue Outlook: Analysis and Methodology, pp. 230-233.

Subject	Description	Effective Date
Legislation Enacted in 1999		
Clothing and Footwear	Changed the effective date of the permanent exemption for clothing and footwear priced under $110 from December 1, 1999, to March 1, 2000.	March 1, 2000
	Temporarily exempted clothing and footwear priced under $500 for the periods of September 1-7, 1999, and January 15-21, 2000.	September 1-7, 1999; January 15-21, 2000
Computer Hardware	Provided an exemption for computer system hardware used to design and develop Internet web sites for sale.	March 1, 2001
Farm Production	Expanded the farm production exemption to include fencing and certain building materials. Converted the refund for tax paid on motor vehicles to an exemption.	March 1, 2001
Telecommunications Equipment	Exempted machinery and equipment used to upgrade cable television systems to provide telecommunications services for sale and to provide Internet access service for sale.	March 1, 2001
Theater	Exempted certain tangible personal property and services used in the production of live dramatic or musical arts performances.	March 1, 2001
Legislation Enacted in 2000		
Farm Production	Exempted property, building materials and utility services used in farm production. Expanded definition of farms to include commercial horse boarding operations.	September 1, 2000
Internet Data Centers	Exempted computer hardware and software purchased by Internet Data Centers (web site hosting facilities) operating in New York. Included required equipment such as air conditioning systems, power systems, raised flooring, cabling, and the services related to the exempted property.	September 1, 2000
Vending Machines	Exempted food and drink sold through a vending machine that costs 75 cents or less.	September 1, 2000
Telecommunications Equipment and Communications Services	Exempted property used to provide telecommunications services, Internet access services, or a combination thereof. Also, exempted certain services to the exempted property, such as installation and maintenance. Provided a three-year exemption for machinery and equipment used to upgrade cable television systems to a digital-based technology.	September 1, 2000
Radio and Television Broadcasting	Exempted machinery and equipment (including parts, tools and supplies) and certain services used for production and transmission of live or recorded programs. A broadcaster includes Federal communications licensed radio and television stations, television networks, and cable television networks.	September 1, 2000
Pollution Abatement	Exempted manufacturing and industrial pollution control equipment and machinery.	March 1, 2001
Transmission and Distribution of Electricity and Gas	Phased out over three years the sales tax on the separately purchased transmission of electricity and gas.	September 1, 2000
Empire Zones	Exempted property and services used or consumed by qualified businesses within Empire Zones.	March 1, 2001
Purchase of Gas or Electricity from Outside of New York	Imposed a compensating use tax on purchases of gas or electricity from vendors located outside of New York.	June 1, 2000
Legislation Enacted in 2001		
Empire Zones	Added eight new Empire Zones, for a total of 66 zones throughout the State. Four of the eight new Empire Zones became effective immediately.	October 29, 2001
Legislation Enacted in 2002		
Temporary Exemption in Liberty Zone	Temporarily exempted most tangible personal property priced under $500 sold in the Liberty and Resurgence Zones in New York City for the periods of June 9-11, July 9-11 and August 20-22, 2002.	June 1, 2002

Subject	Description	Effective Date
EFT Threshold Change	Lowered the Electronic Fund Transfer threshold from $1 million to $500,000.	September 1, 2002
Legislation Enacted in 2003		
Surcharge	Raised the State sales tax rate from 4 to 4.25 percent through May 31, 2005.	June 1, 2003
Temporary repeal of clothing exemption	Temporarily repealed the exemption on items of clothing and footwear priced under $110 and created two clothing exemption weeks at the same $110 threshold.	June 1, 2003
Use tax line on PIT return	Required a line on PIT returns for taxpayers to report use tax owed.	May 24, 2003
Legislation Enacted in 2004		
Extend Temporary Repeal of Clothing Exemption	Extended the expiration date to May 31, 2005, for the temporary repeal of the exemption on items of clothing and footwear priced under $110 and created two exemption weeks at the same $110 threshold.	August 20, 2004
Aircraft Parts and Services	Exempted parts used exclusively to maintain, repair, overhaul or rebuild aircraft parts or aircraft services.	December 1, 2004
Vessels Providing Local Transit	Provided refunds and credits for certain vessels used to provide transit service and certain related property and services.	December 1, 2004
Contractors and Affiliates	Required contractors, subcontractors and their affiliates who make deliveries of taxable services or tangible personal property valued at more than $300,000 to New York locations to register as sales tax vendors.	August 20, 2004
Legislation Enacted in 2005		
Extend Temporary Repeal of Clothing Exemption	Extended the expiration date to March 31, 2007, for the temporary repeal of the exemption on items of clothing and footwear priced under $110 and created two exemption weeks at the same $110 threshold. If the 2006-07 Executive Budget proposes tax cuts, the year-round exemption for such items takes effect on April 1, 2006.	April 12, 2005
Manhattan Parking Vendors	Made permanent the sales tax enforcement provisions relating to parking vendors in Manhattan.	April 12, 2005
Metropolitan Commuter Transportation District Sales Tax Rate	Increased the sales and use tax rate in the Metropolitan Commuter Transportation District (MTCD) from 0.25 percent to 0.375 percent.	June 1, 2005
Sales Tax Medicaid Intercept	Provided for the State to calculate an optional local "Medicaid amount", and for such amount to be intercepted from local sales tax distributions and directed to the State.	April 12, 2005
Amusement Park Admissions	Extended until October 1, 2006, the 75 percent sales tax exemption of the amount charged for admission to a qualifying place of amusement.	April 12, 2005
Lower Manhattan Office Space	Provided sales tax exemption for property used to furnish or equip lower Manhattan office space.	August 30, 2005
Residential Solar Energy	Exempted the sale and installation of residential solar energy systems equipment from sales and use taxes.	July 26, 2005
In Bay Car Washes	Exempted coin-operated or fully automated car washing, waxing or vacuuming from sales and use taxes.	December 1, 2005
Marine Terminal Facilities	Exempted certain machinery and equipment for marine container terminals in New York City from State sales and use taxes.	December 1, 2005
Waste Transfer Stations	Exempted certain waste transfer services from State and local sales and use taxes.	December 1, 2005
State Charter Credit Unions	Exempted State charter credit unions from sales and use taxes.	March 1, 2006
Direct Shipment of Wine	Provided for certain limited direct interstate shipments of wine.	August 11, 2005
Electricity	Exempted electricity, refrigeration and steam services produced by a cogeneration facility owned by certain cooperative corporations.	March 1, 2006

Sales Tax Sharing Agreements

County				
Albany	City Town Village	4.00%		The County retains 60% and distributes 40% to the cities, towns and villages. The 40% distribution is divided between the towns and cities on the basis of published decennial census population figures. Within the towns of Coeymans and Colonie, the town total is divided between the town and the respective village on the basis of assessed value, per signed agreements. Within the Town of Green Island, the town total is divided between the Town of Green Island (10%) and the Village of Green Island (90%) per signed agreement. Within the Towns of New Scotland and Guilderland, the town total is divided between the town and the village based on population by agreement within the town.
Allegany	County retains 100%	4.50%		N/A.
Broome	City Town Village	4.00%		The County retains 2.575% and distributes the remaining 1.425% to the City of Binghamton, towns and villages within the county. The distribution is based on population.
Cattaraugus	Town Village	4.00%	Olean Salamanca	The County retains 2.5% and distributes the remainder to towns and villages, based on full value.
Cayuga	Town Village	4.00%	Auburn	The County retains 50% and distributes 50% to towns and villages, based on taxable assessed value.
Chautauqua	City Town Village	4.25%		The first 3%: the County retains 50% and the remaining 50% is distributed to cities, towns and villages based on population. The additional 1.25% is retained by the County.
Chemung	City Town Village	4.00%		The first 3%: the County retains 50% and distributes the remaining 50% to cities, towns and villages based on share of population. The additional 1% is retained by the County.
Chenango	Town Village	4.00%	Norwich	The first 3%: the County retains 50% and distributes the remaining 50% to towns and villages based on full value. The additional 1%: is retained by the County and is dedicated to construction, operations and maintenance, and debt service for a county public safety building.
Clinton	City Town Village	3.75%		The first 3%: up to $27.1 million, the County retains 55% and distributes 45% to all other municipalities. For amounts over $27.1 million, the County retains 65% and distributes 35% to municipalities; distributions to the City of Plattsburgh are based on population; distributions to towns and villages are based on full value. The additional 0.75%: is retained by the County.
Columbia	City Town Village	4.00%		The County retains 70% and distributes 30% (quarterly) to municipalities based on share of population from the latest census. Village distribution is based on the % of full value of real property in the village vs. the full value of the town. The county, per agreement with the City of Hudson, pays the city an additional $40,000 quarterly from the County share. In exchange, the City agrees to waive its pre-emptive right.
Cortland	City Town Village	4.00%		The County retains 58%, distributes 17.5% to the City of Cortland, and 26.5% to towns and villages, based on full value.
Delaware	County retains 100%	4.00%		N/A.
Dutchess*	City Town Village	3.75%		The County distributes 10.123% to the cities of Beacon (30.3%) and Poughkeepsie (69.7%) and 8.33% to the town-wide area of the County based on population. The balance is retained by the County.
Erie	City Town School district Niagara Frontier Transportation Authority	4.75%		The first 3%: the County retains 35.3055%; 10.0087% is distributed to the Cities of Buffalo, Lackawanna and Tonawanda on the basis of population; 25.6858% is divided among the Cities of Buffalo, Lackawanna and Tonawanda and the towns on the basis of population. The amount distributed to towns is based on full value and population and 29% is divided among all the school districts with territory in the County on the basis of average daily attendance. The Cities of Lackawanna and Tonawanda are guaranteed an annual minimum of $1,172,706 and $1,534,671, respectively. The additional 1%: 0.1250% is distributed to the Niagara Frontier Transportation Authority and the balance is retained by the County. The next 0.25% (effective June 2005) is retained by the County. A portion of the next 0.5% (effective January 2006) will be shared with the cities, towns and villages.
Essex	County retains 100%	3.75%		N/A.
Franklin	County retains 100%	3.00%		N/A.

County Name	Sharing of County Distribution	Local Rate	Cities [illegible]	Details of Sharing Agreement
Fulton	Town Village	4.00%	Gloversville Johnstown	The County retains 50% and distributes 50% to towns and villages, based on full value.
Genesee	City Town Village	4.00%		The County retains 50%, distributes 16% to the City of Batavia, and 34% to towns and villages, based on assessed valuation.
Greene	County retains 100%	4.00%		N/A.
Hamilton	County retains 100%	3.00%		N/A.
Herkimer	City Town Village	4.00%		The first 3%: the Country retains 62.24%, the City of Little Falls receives 4.43% and 33.33% is distributed to the towns and villages; 50% of this distribution is based on population, 50% is based on full value. The additional 1%: the City of Little Falls receives $70,000 distributed quarterly. Towns and villages receive $530,000 distributed quarterly in the same percentages as the 3% distribution. The County retains the rest.
Jefferson	City Town Village	3.75%		The first 3%: the County retains 49%, and distributes 23% to the City of Watertown, and 28% to towns and villages, based on share of assessments (updated annually). The additional 0.75% is retained by the County and designated for Medicaid.
Lewis	County retains 100%	3.75%		N/A.
Livingston	Town Village	4.00%		The first 3%: the County distributes 6.67% to towns and villages based on equalization rates, assessments, and population. The additional 1% is retained by the County to offset Medicaid expenses.
Madison	Town Village	4.00%	Oneida	The County retains 50% and distributes 50% to towns and villages based on full value.
Monroe	City Town Village School district	4.00%		Monroe County adopted a new formula in 2000. The provisions are as follows: the Morin/Ryan Act formula remains in effect for the first 3%, including the hold harmless provision for schools and villages. The additional 1%: schools receive 5% based on enrollment, towns receive 3% based on population, villages receive 1.25% based on population. The remaining 90.75% is divided between the City of Rochester and the County so that when added to the 3% tax calculated under the Morin/Ryan Act, both the City and County shares are equal.
Montgomery	City Town Village	4.00%		The first 3%: the County retains 50%, distributes 15% to the City of Amsterdam and 35% to towns and villages based on full value. The additional 1%: the County retains 90% and distributes 10% to the City of Amsterdam.
Nassau*	City Town Village	4.25%		The first 3%: the County retains 100%. The next 0.75%: the County distributes 1/3 to fund a local government assistance program for the three towns and two cities within the County. The assistance is distributed quarterly, on a per capita basis, based on the most recent decennial census. Villages also receive assistance, in an amount not to exceed one-sixth of the revenues received from the imposition of the 0.75% sales and use tax that are remaining after the towns and cities have received their funding. In 2005, the villages received a lump sum amount of $750,000 which was distributed on a per capita basis. The final 0.50%: is retained by the County.
Niagara	City Town Village	4.00%		The first 3%: the County retains 47%, distributes 16% to E-911 and 51.4% to cities, towns, and villages. Villages receive a portion of the town share based on real property values, except Somerset. Somerset receives its share based on population. The additional 1%: is retained by the County to support Medicaid expenses.
Oneida	Town Village	5.50%	Rome Sherrill Utica	The first 3%: the County retains 50% and distributes 50% to towns and villages based on full value. The next 1%: towns and villages receive $1.5 million distributed by population and the County receives the balance. The final 1.5%: is retained by the County.

County Name	Recipients of Distribution	Rate	Other Taxing Jurisdictions Receiving	Distribution Method
Onondaga	City Town Village School district	4.00%		Generally, town shares are based on population. Village shares are based on their share of full value in the town. School shares are based on average daily attendance. During 2000, the County Legislature adopted a revised sales tax formula for the first 3%. It guarantees that sales tax revenues will not decline for the City of Syracuse, Towns and School Districts from one year to the next. The formula provides shared growth from 0-2% each year. If growth exceeds 2%, the County retains 100% of the excess. For negative growth, all jurisdictions are held harmless at the prior year level. Two successive years of negative growth triggers the possibility of a re-opener of the sales tax agreement. During 2004, actual results were as follows: County (39.39%), City (25.14%), Towns (28.85%), Schools (6.62%). During the period 2005-2010, the additional 1% is subject to the following distributions: County (72.70%), City (11.35%), Towns/Villages (13.04%), Schools (2.91%).
Ontario	Town Village	3.00%		New distributions would be effective March 1, 2006, pending State approval of a proposed 0.125% rate increase and a revised sharing agreement. The first 3%: The County retains 50% and distributes 50% to cities, towns and villages based on population and assessed value. Assuming countywide sales tax collections increase, towns would receive no less than the sales tax amounts received in the 2004 base year. The proposed 0.125% (bringing the local tax rate to 3.125%): Pending State legislative approval, proceeds from the proposed additional rate would be distributed to cities, towns and villages. The County would not retain any share of the additional 0.125% rate. Starting in 2008, $100,000 (from the additional 0.125%) would be set-aside annually to be split between the Cities of Canandaigua and Geneva; this amount would would increase $50,000 each year.
Orange*	City Town Village	3.75%		The County keeps 73.616% and distributes 26.384% to cities, towns, and villages. The three cities receive 32.525% of the 26.384% broken down as follows: City of Newburgh 43.995%, City of Middletown 40.841%, and City of Port Jervis 15.164%. The towns and villages receive 67.475% of the 26.384% based on population, except for the Town of Highlands and the Village of Highland Falls, which are based on their ratio of full value to entire town.
Orleans	Town Village	4.00%		The first 3%: the County retains 77.7811%, and distributes the remainder to towns and villages based on population/full value--subject to a cap of $1,366,671 million. The balance goes to the County. The additional 1% is retained by the County.
Oswego	Town Village	4.00%	Fulton Oswego	Up to $10 million: the County retains 80% and distributes 20% to towns/villages. Over $10 million: the County retains 90% and distributes 10% to towns/villages. Distributions to towns and villages are based on population.
Otsego	City Town Village	4.00%		The County retains 76%, distributes 12% to towns and villages (based on full value) and 12% to the City of Oneonta.
Putnam*	County retains 100%	3.50%		N/A.
Rensselaer	City Town Village	4.00%		The County retains 65.9%, distributes 19.6% to the City of Troy and 29% to the City of Rensselaer. Towns and villages are distributed 11.6% plus an additional 3.5% of any distributions that exceed a base amount (1999 collections). Distributions to towns and villages are based on property value.
Rockland*	Town Village	3.625%		The County retains 3.5% and distributes 0.125% to towns and villages, based on population.
St. Lawrence	City Town Village	3.00%		The County retains 50% and distributes 6.437389% to the City of Ogdensburg. The remainder is distributed to towns and villages based on assessed valuation and population.
Saratoga	City Town Village	3.00%	Saratoga Springs	In addition to the amount distributed under Section 1262d, $3 million is distributed by population. The City of Mechanicville receives an additional $542,000 and the Town of Milton receives an additional $60,000 annually.
Schenectady	City Town Village	4.00%		The first 3%: the City of Schenectady is guaranteed minimum of $11 million, and the towns are guaranteed a minimum of $7.8 million. Each town and village shall receive a proportionate share based on full value. Village distribution shall be pursuant to NYS statute. Next 0.5%: Metroplex (70%), towns and villages (30%). Distribution of the 30% to towns and villages is based on population in accordance with latest decennial Federal Census. Final 0.5%: fully retained by County. (Note: The County retains, for County purposes, the balance of funds collected from the first 3.5%, up to 60%. Any amount in excess of 60% is to be shared with city, towns and villages).
Schoharie	Town Village	4.00%		The County retains 95% and distributes 5% to towns and villages, based on assessed value.
Schuyler	Town Village	4.00%		The County retains 75% and distributes 25% towns and villages based on assessed value.
Seneca	County retains 100%	4.00%		N/A.

County	Distribution of County Taxes	Tax Rate	Cities Imposing Separate Taxes	Description of Agreement
Steuben	Town Village	4.00%	Corning Hornell	The first 3%: the County retains 50% and distributes 50% to towns and villages, based on full value. The additional 1%: Corning receives $600,000, Hornell receives $550,000, and towns and villages share $750,000, based on full value. The County retains the balance.
Suffolk*	County retains 100%	4.25%		N/A.
Sullivan	County retains 100%	3.50%		N/A.
Tioga	Town Village	4.00%		The first 3%: the County retains 67% and distributes 33% to towns and villages based on population and full value, respectively. The additional 1%: is retained by the County for capital projects, debt service and to help offset mandates.
Tompkins	Town Village	4.00%	Ithaca	The first 3%: the County retains 50% and distributes 50% to towns and villages based on population. The additional 1%: the County retains 50%, distributes 25% to the City of Ithaca based upon income from City and shares 25% with towns and villages
Ulster	Cities Town	4.00%		The County retains 85.50%, distributes 11.50% to the City of Kingston and 3% to towns based on full value.
Warren	Town Village	3.00%	Glens Falls	The County retains 50% and distributes 50% to towns and villages, based on full value. The County also has an agreement (signed in 2004) to pay Glens Falls 2% of the County share on a quarterly basis. This payment is in addition to the City's pre-empted 1.5%.
Washington	County retains 100%	3.00%		N/A.
Wayne	Town Village School district	4.00%		The County retains 50%, and distributes 33% to school districts and 17% to towns. Distributions to school districts are based on average daily attendance. Distributions to towns are based on population. Where there is a village within the township, a distribution is made between the town and village based on assessed value. The school districts are capped to a maximum distribution of $5.4 million. The balance is retained by the County.
Westchester*	City Town Village School district	3.00%	Mount Vernon New Rochelle White Plains Yonkers	The County retainis 1.5%. The next 1 percent is distributed as follows: 33.3% to the County; 50% to towns, villages, Rye and Peekskill; 16.75% to school districts. The next 0.5% is distributed as follows: 70% to County; 20% to towns, villages, Rye and Peekskill; 10% to school districts. Localities and school district shares are based on population.
Wyoming	County retains 100%	4.00%		N/A.
Yates	County retains 100%	4.00%		N/A.

Local tax rate does not include 0.375% for the Metropolitan Commuter Transportation District.

Frequently Asked Questions on the Sales Tax



- **What local jurisdictions can impose the general sales tax?**

  Cities and counties. (See §1210 of the Tax Law.)

- **At what rate may the tax be imposed?**

  Generally, up to 3 percent, in increments of 0.25 percent.

  (Note: Most counties and certain cities, have received legislative approval to impose sales tax at a rate in excess of 3 percent. Most often the additional sales tax is 1 percent in addition to the 3 percent.)

- **Can a county, and a city in a county, both impose in the city the general sales tax at the rate of 3 percent?**

  Yes, but in the absence of a statute providing otherwise, the maximum combined rate in the city may not exceed 3 percent. As a rule, the county and the city each have a prior right to impose within the city the general sales tax at the rate of 1.5 percent. This can occur in a variety of combinations. For example, a county could impose a 2 percent rate and the city a 1 percent rate or the county could impose a 1 percent rate and the city a 2 percent rate. (See §1224 and §1262 (d) and (e) of the Tax Law.)

  If a county is imposing a 2 percent rate and the city wants to impose a 1.5 percent rate, the city may do so. However, the county must be notified in advance. When the city's 1.5 percent tax rate becomes effective, the county's 2 percent tax rate (in the city boundary) rolls back to 1.5 percent. As a result, the total sales tax rate within the city will be 3 percent. In the area of the county outside the city, the tax rate remains 2 percent.

- **Who administers the sales tax?**

  The New York State Department of Taxation and Finance.

- **When may a local sales tax be imposed?**

  The local sales tax (including increases to the sales tax) may be imposed on December 1, March 1, June 1 or September 1, unless otherwise approved by the law. (See §1210(d) of the Tax Law.)

- **Who distributes the receipts from local sales taxes?**

  The State Comptroller distributes net receipts monthly to the local taxing jurisdictions (counties, or cities that impose their own sales tax) on the basis of amounts certified by the State Tax Commissioner. Distributions within a county are made by the chief fiscal officer of the county and must be made at least quarterly.

- **Can a county share its sales tax receipts with other local governments or for educational purposes?**

  Yes. Unless the city in the county imposes its own sales tax, the county also has the option to retain all of its sales tax receipts for county purposes. If, however, a city in the county imposes its own sales tax, the county is required to allocate a portion of its sales tax receipts to the cities and towns other than the city imposing its own sales tax.

- **Can a county voluntarily share its sales tax receipts with just the cities in the county, without also sharing a portion of the receipts with the towns in the county?**

  Yes, but only pursuant to a sales tax agreement between the county and the cities within the county. In the absence of a sales tax agreement, to the extent that a county does not elect to use its sales tax receipts for county or educational purposes, the receipts must be allocated to all cities and towns within the county.

- **Can a county distribute sales tax receipts to school districts but not to cities and towns in the county?**

  Yes. (See §1262 (a) and (c) of the Tax Law.)

- **If a County gets approval to increase its sales tax rate above the 3 percent allowed by statute, must it share that additional sales tax with other localities, in accordance with existing sharing agreements?**

  Maybe. It depends on the terms of the legislation authorizing the additional sales tax, the terms of any existing sales tax agreement, or both.

- **Who is entitled to the interest earned by the county when investing sales tax receipts during the period prior to distribution to other municipalities?**

  While sales tax receipts are in the custody of the county, they are considered to be county moneys. The interest earned on the temporary investment of these moneys belongs to the county. (Opinion of the State Comptroller No. 79-472.)

- **If a county voluntarily shares its sales tax receipts, and a town and all villages within the town elect to receive their shares of sales tax receipts in cash, how may the town use these moneys?**

  The town must use the sales tax receipts to reduce taxes levied for "part-town activities," and any balance remaining or portion thereof, in the discretion of the town board, may be applied to reduce general town taxes, county taxes levied in the area of the town outside the villages, or may be used for "part-town activities," or any combination thereof.

- **Can a county, city or school district get help from the State regarding sales and compensating use taxes?**

  Yes. A county, city or school district should contact the Office of Counsel at the New York State Department of Taxation and Finance (Tax Department) at (518) 457-2153 to ask for help. The Tax Department will answer questions about how a locality goes about imposing sales and use taxes, changing its rate of tax, repealing taxes and providing exemptions (clothing and footwear, residential energy sources, solar energy equipment, Empire Zone businesses, etc.). The Tax Department will also answer questions about what happens when a county and a city in the county each want to impose sales and use taxes.

- **Does the Tax Department have model enactments for localities to use?**

  Yes. The Tax Department has model local laws, ordinances and resolutions that localities are required to use. The locality should contact the Office of Counsel at (518) 457-2153 to request the appropriate model enactment.

- **Are there deadlines for a locality to adopt a local law, ordinance or resolution relating to local sales and use taxes?**

  Yes. New sales and use taxes and changes to existing sales and use taxes must take effect on the first day of a sales tax quarterly period (March, June, September and December 1st). Generally, the locality is required to adopt its local enactment and mail in accordance with statutory requirements a certified copy of the enactment to the Tax Department at least 90 days prior to the effective date. The locality should contact the Tax Department as early in the process as possible, in order to ensure that its enactment can take effect on the desired effective date.

Sales Tax Rate Table

New York State Department of Taxation and Finance

Publication 718-A

(2/06)

Enactment and Effective Dates of Sales and Use Tax Rates

Use this publication to determine the enactment and effective dates of sales and use tax rates imposed, increased, or decreased by the various localities. The rates indicated cannot be added to determine the combined state, county, and city tax rate. Refer to Publication 718, *New York State Sales and Use Tax Rates by Jurisdiction*, for the combined rates. Any items changed from the previous version are noted in ***boldface italics***.

Jurisdiction	%	Enacted	Effective
New York State	2	14 Apr. 1965	1 Aug. 1965
	3	29 Mar. 1969	1 Apr. 1969
	4	2 Apr. 1971	1 June 1971
	4¼	15 May 2003	1 June 2003
K	4	15 May 2003	1 June 2005
Albany County	2	11 Dec. 1967	1 Mar. 1968
	3	15 Dec. 1969	1 Mar. 1970
C	4	31 July 1992	1 Sep. 1992
Allegany County	2	16 Nov. 1967	1 Mar. 1968
	3	14 Oct. 1975	1 Mar. 1976
	4	14 Oct. 1986	1 Dec. 1986
C	4½	13 Sep. 2004	1 Dec. 2004
Bronx County	See *New York City* on page 3		
Broome County	2	13 July 1965	1 Aug. 1965
	3	19 Feb. 1974	1 June 1974
C	4	3 Feb. 1994	1 Mar. 1994
Cattaraugus County	3	21 Nov. 1967	1 Mar. 1968
C	4	30 Dec. 1985	1 Mar. 1986
Cayuga County	3	19 Mar. 1968	1 June 1968
C	4	28 July 1992	1 Sep. 1992
Chautauqua County	3	10 May 1968	1 Sep. 1968
G	4¼	4 Feb. 2005	1 Mar. 2005
Chemung County	2	12 July 1965	1 Aug. 1965
	3	12 Dec. 1967	1 Mar. 1968
C	4	12 Aug. 2002	1 Dec. 2002
Chenango County	2	2 Dec. 1968	1 Mar. 1969
	3	23 Sep. 1991	1 Dec. 1991
C	4	15 July 2002	1 Sep. 2002
Clinton County	3	24 Nov. 1967	1 Mar. 1968
C	3¾	28 Apr. 2004	1 June 2004
Columbia County	2	29 Nov. 1971	1 Mar. 1972
	3	8 Dec. 1982	1 Mar. 1983
C	4	28 Jan. 1995	1 Mar. 1995
Cortland County	3	24 Nov. 1967	1 Mar. 1968
C	4	5 Aug. 1992	1 Sep. 1992
Delaware County	2	13 June 1990	1 Sep. 1990
	3	14 Nov. 2001	1 Mar. 2002
C	4	8 Oct. 2003	1 Dec. 2003
Dutchess County A	1	9 Dec. 1975	1 Mar. 1976
	3	11 Dec. 1989	1 Mar. 1990
C	3¾	28 Feb. 2003	1 June 2003
Erie County	2	27 July 1965	1 Aug. 1965
	3	30 Nov. 1971	1 Mar. 1972
	4	10 Dec. 1984	1 Mar. 1985
	4	18 Dec. 1986	1 Jan. 1987
	3	Effective 1 Jan. 1988 – 9 Jan. 1988	
M	4	7 Jan. 1988	10 Jan. 1988
L	4¼	23 June 2005	1 July 2005
C	4¾	10 Jan. 2006	15 Jan. 2006
Essex County	3	4 Dec. 1967	1 Mar. 1968
C	3¾	19 July 2004	1 Sep. 2004
Franklin County	2	22 Aug. 1967	1 Dec. 1967
	3	29 May 1968	1 Sep. 1968
Fulton County	3	11 Dec. 1967	1 Mar. 1968
C	4	8 Aug. 2005	1 Dec. 2005
Genesee County	2	25 June 1965	1 Jan. 1966
	3	26 Nov. 1980	1 Mar. 1981
C	4	22 June 1994	1 Sep. 1994
Greene County	2	22 Mar. 1968	1 June 1968
	3	1 Feb. 1977	1 June 1977
C	4	4 Feb. 1993	1 Mar. 1993
Hamilton County	3	4 Jan. 1968	1 June 1968
Herkimer County	3	14 Dec. 1987	1 Mar. 1988
C	4	5 July 1994	1 Sep. 1994
Jefferson County	2	12 July 1965	1 Aug. 1965
	3	14 Nov. 1967	1 Mar. 1968
C	3¾	27 July 2004	1 Sep. 2004
Kings County	See *New York City* on page 3		
Lewis County	2	24 Aug. 1981	1 Dec. 1981
	3	6 Jan. 1987	1 Mar. 1987
C	3¾	30 Apr. 2004	1 June 2004
Livingston County	3	30 Nov. 1967	1 Mar. 1968
C	4	1 Apr. 2003	1 June 2003
Madison County	2	15 Dec. 1967	1 Mar. 1968
	3	28 Aug. 1984	1 Dec. 1984
C	4	1 Apr. 2004	1 June 2004
Monroe County	3	20 July 1965	1 Aug. 1965
	3½	3 Aug. 1992	1 Sep. 1992
H	4	10 Feb. 1993	1 Mar. 1993
C	4	10 Feb. 1993	1 Dec. 1993
Montgomery County	3	5 Dec. 1967	1 Mar. 1968
C	4	22 Apr. 2003	1 June 2003

A — Enacted July 11, 1981, effective September 1, 1981, an additional tax of ¼% is imposed in these localities for the benefit of the Metropolitan Commuter Transportation District (MCTD). Enacted April 12, 2005, effective June 1, 2005, the additional tax imposed in these localities for the benefit of the MCTD increased to ⅜%.
B — Effective December 31, 2013, additional ¼% tax will expire.
C — Effective November 30, 2007, additional tax will expire.
D — Effective November 30, 2007, 3% will expire.
E — Effective November 30, 2007, additional ½% will expire.
F — Effective March 1, 2007, ½% will expire.
G — Effective August 31, 2006, additional tax will expire.
H — Effective November 30, 1993, additional ½% plus ½% rates expired, replaced effective December 1, 1993, by additional 1% (see footnote C).
I — Effective August 31, 2028, additional ½% tax will expire.
J — Effective November 30, 2007, ⅜% will expire.
K — Effective May 31, 2005, additional ¼% expired.
L — Effective January 14, 2006, additional ¼% expired.
M— Effective February 29, 2008, additional 1% tax will expire.

Note: This table is updated periodically throughout the year and can be accessed at http://www.tax.state.ny.us/pubs_and_bulls/publications/sales_pubs.htm

Jurisdiction		%	Enacted	Effective
Nassau County		2	9 Dec. 1968	1 Mar. 1969
		3	29 Nov. 1971	1 Mar. 1972
		4	16 July 1976	1 Sep. 1976
	A	3	16 July 1976	1 Sep. 1977
		4	25 Apr. 1983	1 Jun. 1983
		4	10 Sep. 1984	1 Jan. 1985
		3¼	10 Sep. 1984	1 Jan. 1986
	C	4¼	23 July 1991	1 Sep. 1991
New York County		See *New York City* on page 3		
Niagara County		3	3 Dec. 1968	1 Mar. 1969
	C	4	22 Jan. 2003	1 Mar. 2003
Oneida County	D	3	27 Oct. 1982	1 Dec. 1982
		4	3 Aug. 1992	1 Sep. 1992
	C	5½	3 Feb. 2005	1 Mar. 2005
Onondaga County		2	11 Sep. 1967	1 Dec. 1967
		3	11 Oct. 1968	1 Dec. 1968
	C	4	15 July 2004	1 Sep. 2004
Ontario County		2	26 May 1967	1 Sep. 1967
		3	12 Mar. 1970	1 June 1970
Orange County	A	1	10 Sep. 1982	1 Dec. 1982
		2	26 Oct. 1983	1 Dec. 1983
		3	13 Dec. 1991	1 Mar. 1992
	C	3¾	2 Apr. 2004	1 June 2004
Orleans County		2	30 Nov. 1967	1 Mar. 1968
		3	4 June 1970	1 Sep. 1970
	C	4	1 May 1993	1 June 1993
Oswego County		3	11 Apr. 1996	1 Mar. 1997
	C	4	24 June 2004	1 Sep. 2004
Otsego County		2	7 Dec. 1967	1 Mar. 1968
		3	16 Oct. 1991	1 Dec. 1991
	C	4	3 Sep. 2003	1 Dec. 2003
Putnam County		1	10 Feb. 1977	1 June 1977
	A	2	14 Oct. 1980	1 Mar. 1981
		2½	17 Oct. 1983	1 Dec. 1983
		2	5 May 1987	1 Sep. 1987
		3	1 Nov. 1988	1 Mar. 1989
	C	3½	15 July 2005	1 Sep. 2005
Queens County		See *New York City* on page 3		
Rensselaer County		2	24 July 1968	1 Dec. 1968
		3	27 Oct. 1982	1 Dec. 1982
	C	4	25 July 1994	1 Sep. 1994
Richmond County		See *New York City* on page 3		
Rockland County		2	20 Dec. 1983	1 Mar. 1984
	A	2½	27 Nov. 1990	1 Mar. 1991
	F	3	19 July 1991	1 Sep. 1991
	J	3⅜	14 Feb. 2002	1 Mar. 2002
St. Lawrence County		3	13 Nov. 1967	1 Mar. 1968
Saratoga County		3	22 Apr. 1982	1 June 1982
Schenectady County		½	29 Sep. 1988	1 Dec. 1988
		3	24 Jan. 1989	1 Mar. 1989
		3½	14 July 1998	1 Sep. 1998
	E/I	4	28 Apr. 2003	1 June 2003

A — Enacted July 11, 1981, effective September 1, 1981, an additional tax of ¼% is imposed in these localities for the benefit of the Metropolitan Commuter Transportation District (MCTD). Enacted April 12, 2005, effective June 1, 2005, the additional tax imposed in these localities for the benefit of the MCTD increased to ⅜%.

Jurisdiction		%	Enacted	Effective
Schoharie County		2	20 Jan. 1984	1 June 1984
		3	17 Dec. 1991	1 Mar. 1992
	C	4	12 Mar. 2004	1 June 2004
Schuyler County		3	27 Nov. 1967	1 Mar. 1968
	C	4	14 Dec. 1999	1 Mar. 2000
Seneca County		1	12 Jan. 1982	1 Mar. 1982
		3	13 July 1982	1 Sep. 1982
	C	4	13 Aug. 2002	1 Dec. 2002
Steuben County		2	27 Nov. 1967	1 Mar. 1968
		3	22 Nov. 1971	1 Mar. 1972
	C	4	26 Oct. 1992	1 Dec. 1992
Suffolk County		2	2 Dec. 1968	1 Mar. 1969
	A	3	8 Feb. 1972	1 Sep. 1972
	B	3¼	12 Sep. 1984	1 Dec. 1984
		3¾	31 July 1991	1 Sep. 1991
		4¼	6 Aug. 1992	1 Sep. 1992
		4	16 Nov. 1995	1 Jan. 1996
	C	4¼	8 May 2001	1 June 2001
Sullivan County		2	20 Dec. 1967	1 Mar. 1968
		3	6 Jan. 1975	1 Mar. 1975
	C	3½	9 May 2003	1 June 2003
Tioga County		2	27 May 1968	1 Sep. 1968
		3	14 May 1984	1 Sep. 1984
		3½	10 Jan. 1994	1 Mar. 1994
	C	4	19 Sep. 2003	1 Dec. 2003
Tompkins County		3	28 Nov. 1966	1 Mar. 1967
	C	4	1 Sep. 1992	1 Dec. 1992
Ulster County		1	13 Feb. 1969	1 June 1969
		3	9 Dec. 1976	1 Mar. 1977
		3¾	12 Aug. 1993	1 Dec. 1993
	C	4	30 July 2002	1 Sep. 2002
Warren County		3	27 Nov. 1967	1 Mar. 1968
Washington County		3	25 Feb. 1970	1 Sep. 1970
Wayne County		2	15 Nov. 1967	1 Mar. 1968
		3	20 Feb. 1968	1 June 1968
	C	4	18 Nov. 2003	1 Mar. 2004
Westchester County	A	1	22 Dec. 1971	1 Sep. 1972
		1½	28 Dec. 1981	1 June 1982
		2½	22 July 1991	15 Oct. 1991
		3	24 Feb. 2004	1 Mar. 2004
Wyoming County		3	25 Nov. 1980	1 Mar. 1981
	C	4	13 Oct. 1992	1 Dec. 1992
Yates County		3	20 Nov. 1967	1 Mar. 1968
	C	4	30 July 2003	1 Sep. 2003

B — Effective December 31, 2013, additional ¼% tax will expire.
C — Effective November 30, 2007, additional tax will expire.
D — Effective November 30, 2007, 3% will expire.
E — Effective November 30, 2007, additional ½% will expire.
F — Effective March 1, 2007, ½% will expire.
G — Effective August 31, 2006, additional tax will expire.
H — Effective November 30, 1993, additional ½% plus ½% rates expired, replaced effective December 1, 1993, by additional 1% (see footnote C).
I — Effective August 31, 2028, additional ½% tax will expire.
J — Effective November 30, 2007, ⅜% will expire.
K — Effective May 31, 2005, additional ¼% expired.
L — Effective January 14, 2006, additional ¼% expired.
M— Effective February 29, 2008, additional 1% tax will expire.

Jurisdiction		%	Enacted	Effective
Cities				
Amsterdam	a	1½	15 Mar. 1968	1 Mar. 1969
		—	Repeal effective 1 June 1994	
Auburn	o	2	29 June 1995	1 Mar. 1996
Batavia	a*	1½	14 July 1980	1 Mar. 1981
		—	Repeal effective 1 Mar. 2000	
Canandaigua		1	13 July 1965	1 Aug. 1965
	a	1½	13 July 1967	1 Mar. 1968
		—	***Repeal effective 1 Mar. 2006***	
Corning	a*	1½	5 Aug. 1974	1 Dec. 1974
Cortland	a/l	3	12 June 1990	1 Mar. 1991
		—	Repeal effective 1 Mar. 1995	
Elmira	a	1½	29 Sep. 1971	1 Mar. 1972
		—	Repeal effective 1 Mar. 1993	
Fulton		2	5 Dec. 1967	1 Mar. 1968
		3	9 Dec. 1971	1 Mar. 1972
	r	4	28 Feb. 2003	1 June 2003
Geneva		1	14 June 1967	1 Sep. 1967
	a	1½	14 June 1967	1 Mar. 1968
		—	***Repeal effective 1 Mar. 2006***	
Glen Cove	d/h	1½	9 Oct. 1979	1 Mar. 1980
	i/j	2	28 June 1983	1 Mar. 1984
		—	Repeal effective 1 Mar. 1988	
Glens Falls	a	1½	19 June 1968	1 Mar. 1969
Gloversville	a	1½	23 June 1987	1 Mar. 1988
	t	3	12 July 2005	1 Dec. 2005
Hornell		1	1 Apr. 1969	1 June 1969
	a*	1½	23 June 1970	1 Mar. 1971
Ithaca	a*	1½	25 June 1969	1 Mar. 1970
Johnstown	• t	3	29 June 1987	1 Mar. 1988
Mechanicville	e	2	10 June 1970	1 Sep. 1970
		—	Repeal effective 1 June 1985	
Mount Vernon		1	23 Feb. 1972	1 June 1972
	d/e	2	27 June 1974	1 Sep. 1974
	q	2½	28 Aug. 1984	1 Dec. 1984
Newburgh		1	27 Oct. 1986	1 Dec. 1986
		—	Repeal effective 1 Mar. 1988	
New Rochelle	d/e	2	4 May 1976	1 Sep. 1976
	m	3	27 July 1993	1 Sep. 1993
New York City		3	22 July 1965	1 Aug. 1965
	d	4	27 June 1974	1 July 1974
		4⅛	4 June 2003	4 June 2003
	s	4	4 June 2003	1 June 2005

a — City preempted the county tax; within city, county tax rate, exclusive of any additional rate, is 1½%.
b — County preempted 1%.
c — Within city, the county rate is 1½%.
d — Enacted July 11, 1981, effective September 1, 1981, an additional tax of ¼% is imposed in these localities for the benefit of the Metropolitan Commuter Transportation District (MCTD). Enacted April 12, 2005, effective June 1, 2005, the additional tax imposed in these localities for the benefit of the MCTD increased to ⅜%.
e — County preempted ½%.
f — County preempted 1½%.
g — Within city, the county rate is 2%, exclusive of any additional rate.
h — City preempted the county tax. Within city, the county rate is 2½%.
i — City preempted the county tax. Within city, the county rate is 2% for the period March 1, 1984, through December 31, 1984.

Jurisdiction		%	Enacted	Effective
Norwich	a	1½	27 June 1989	1 Mar. 1990
Ogdensburg	a	1½	13 June 1968	1 Mar. 1969
		—	Repeal effective 1 Dec. 2000	
Olean	a*	1½	23 Apr. 1968	1 Mar. 1969
Oneida		1	13 June 1972	1 Dec. 1972
	a	1½	13 June 1972	1 Mar. 1973
	o	2	20 Apr. 2004	1 June 2004
Oswego		2	27 Nov. 1967	1 Mar. 1968
	p	3	10 Jan. 1972	1 Mar. 1972
	r	4	29 June 2004	1 Sep. 2004
Plattsburgh	e	2	15 July 1965	1 Aug. 1965
		—	Repeal effective 1 Mar. 1993	
Poughkeepsie	d	1	7 July 1965	1 Aug. 1965
		2	9 Jan. 1969	1 Mar. 1969
		—	Repeal effective 1 Mar. 1990	
Rome	c	1½	22 Oct. 1980	1 Dec. 1980
		1¾	27 June 1990	1 Sep. 1990
	k*	1½	Additional rate expired 1 Sep. 2000	
Salamanca	a*	1½	27 May 1968	1 Mar. 1969
Saratoga Springs		1	3 Feb. 1969	1 June 1969
		2	3 Aug. 1970	1 Dec. 1970
	f	3	28 July 1980	1 Sep. 1980
		—	Repeal effective 1 June 1985	
	c	3	18 Dec. 2001	1 June 2002
Schenectady		3	28 Oct. 1982	1 Mar. 1983
		2½	5 Dec. 1983	1 Mar. 1984
		—	Repeal effective 1 Mar. 1989	
Sherrill	g*	1	27 Dec. 1976	1 June 1977
Troy		1	5 Dec. 1968	1 Mar. 1969
	a	1½	4 June 1970	1 Mar. 1971
		0	27 Oct. 1982	1 Dec. 1982
Utica	a*	1½	8 Apr. 1982	1 June 1982
White Plains	d/e	2	30 Apr. 1973	1 Sep. 1973
	n	2	28 July 1993	1 Sep. 1993
Yonkers		1	30 Dec. 1967	1 June 1968
		2	10 Dec. 1968	1 Mar. 1969
	b	3	3 Jan. 1970	1 Mar. 1970
	c/d/e/q	4	25 Nov. 1975	1 Jan. 1976

j — Effective January 1, 1985, county rate is not subject to preemption. City rate is 1½% for the period January 1, 1985, to the date of repeal.
k — ¼% expired effective September 1, 2000. Was not subject to preemption by county.
l — City preempted the county 1% additional tax. (Effective from September 1, 1992, to the date of repeal; within the city, county tax rate is 2% and city tax rate is 2%.)
m — Additional 1% is not subject to preemption; will expire on December 31, 2007.
n — Additional ½% is not subject to preemption; will expire on August 31, 2007. (City rate is 2% through that date.)
o — City preempted 2% of the county tax.
p — County may not preempt any of the city's tax. City rate is 3%.
q — Additional 1% is not subject to preemption.
r — County may not preempt any of the city's tax. City rate is 4%. Effective November 30, 2007, additional 1% tax will expire.
s — Effective May 31, 2005, additional ⅛% expired.
t — City preempted county tax. Within city, the county rate is 2%.
• — The city may not preempt any of the additional tax the county is presently allowed to impose.

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Alan G. Hevesi, State Comptroller

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Patterson, NY 12563

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Comments on DEIS for Patterson Crossing

In section 1.3.8 Applicant states:

'...The Applicant will be responsible for mitigating the project specific impacts to the greatest extent practicable and will work with the NYS DOT and others to fund and construct other improvements that would help alleviate traffic issues under the current conditions.

'Specifically, the Applicant is committed to participate in a significant way in the funding of intersection improvements in the area. ...[T]he Applicant will work with the appropriate authorities to identify intersections where improvements are warranted as a result of the proposed action and will share in the cost of those improvements. The a[sic] pplicant also commits to working aggressively with the Town, the County and the DOT towards funding an improvement program for road and infrastructure updates in the project vicinity to ensure that the intersections in the study area operate at levels acceptable to the NYS DOT into the future.' (Pp. 1-12 and 1-13.)

In section 4.8 page 54 the Applicant repeats the second paragraph and follows it with:

'With the noted improvements, all studied signalized intersections should perform at or better than level of service D..., the minimum level of service recommended by NYS DOT for signalized intersections.... In addition, with these improvements, all studied unsignalized intersection[sic] are anticipated to perform at level of service D or better with the exception of Longfellow Drive /NYS Route 311 intersection, which should perform at level of service E....' (P. 4.8-54.)

So despite the altruistic and beneficiant tone of the DEIS, the Applicant is actually only proposing to provide for the **minimun-required** level of service, not a level above the minimum which would give some leeway for future increases in the level of service.

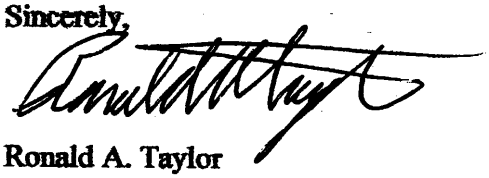
Specifically what mitigation is the Applicant proposing to fund and at what level? The Applicant "will work with the NYS DOT and others to fund' and 'will share in the cost of ... improvements.' –Pretty vague for a DEIS that is supposed to spell out specific remedies, cost-benefits. The closest the Applicant gets to a statement about actual costs is section 4.8.4:

'Development of the site will generate $6.2 to $7.4 million in sales tax revenue per year to the County and $7.0 to $8.4 million per year to the State of New York. This will more than offset the costs for completing the highway infrastructure improvements noted...." (P. 4.8-45.)

The Applicant should give a cost-benefit analysis of the specific improvements recommended. On page 4.8-22 the Applicant lists a number of area projects listed in the NYS DOT Transportation Improvement Program, but does not identify the budgeted

projected costs of the projects. That could be a starting point. A phone conversation with the NYS DOT revealed that the potential cost for the improvement of the intersection of Route 311 and Route 164 would be more than $12 million. What then would the cost of the I84 improvements be? The sale tax revenue generated by the project will not be sufficent to offset the cost of improvements even if wholly devoted to them (very unlikely), one can see. Applicant should be required to provide figures not guesses and wishful thinking.

Sincerely,



Ronald A. Taylor

RECEIVED
SEP 25 2006
T.O.P.
PLANNING & ZONING

Judith Terlizzi
66 Towners Road
Lake Carmel, NY 10512

These are my comments as read but not completed on Thursday, September 14th. I have done some editing since. I neglected to say at the start of my comments that I am and have been a full time resident of the Lake Carmel Park District since 1994 and before that a part time resident for two years.

It is with a great deal of sadness that I stand here tonight

- Sadness because we have neighbor and friends at odds
- Sadness because our lake community is threatened, and
- Sadness because things don't have to be this way

Other people, more dedicated and much more educated and informed than I, have gone over this DEIS and found many flaws. Last night we heard about them. They had to do with:

- Water quantity and quality,
- Inadequate road planning both interior and exterior,
- Poor and inadequate septic design,
- Noise,
- Blasting and potential damage to both homes and wells
- Air quality,
- Tasteless design not fitting in with the landscape and surrounding community

What I have observed in my reading of this DEIS is a failure to take responsibility for most things, a lot of wishful thinking, illogical conclusions and many contradictions. I will point out just a few from the sections I have read and studied.

Page 4.6-7
And this was mentioned last night, the applicant predicts that 19 % of the storm water runoff from impervious surfaces will drain into Lake Carmel. This water will contain parking lot debris including gasoline, anti freeze, oils, road salt and other assorted debris. Last night the spectre of perhaps even rat poison. This is unacceptable.

I would like to ask about run-off. How much is 19%? When a 100 year storm occurs how much is 19%. When a 300 year storm takes place how much is 19%. I would like to add that 100 % of all storm water will be drained from all the impervious surfaces and will not be available to recharge our wells and perhaps even our lake springs.

Not mentioned anywhere although addressed in the Scoping Session is the factor of road salt. Wells in this area are already not potable because of road salt. Ask the employees of the Town Hall in Patterson. What impact will the accumulated road salt have on our wells and more importantly our lake? Who will be responsible?

4.6.4 Another question raised is - Will the applicant install the most recent storm water improvements suggested? I believe called MS 4's that are being mandated by the state or will that be an expensive cost passed on to the taxpayer at a future time.

4.7.3 Mr Maneiro addressed the wildlife situation last evening. I can only reiterate here. How does the applicant even suggest that wildlife will move across Rte 84. Is he building a bridge for them? Will they somehow levitate? I think not. Wildlife will end up as road kill on Routes 311 and Fair Street. Wildlife will move into our populated areas competing with animals already there. Just so you know, we have lots of animals already including Skunk, Possum, Raccoon, Woodchucks and feral cats just to name a few. Perhaps we should even add rats to the list. Oh goody!

4.7.4 If there is to be dedicated open space the only way to insure it will remain dedicated open space is through a conservation easement. Putting it into a deed or on a plat does not insure its maintenance as open space forever.

Last night, speakers addressed both the estimated tax benefits and I stress estimated. We have heard how Alan Hevesi, NYS Comptroller recommends that counties not rely on sales tax for their revenue over 25% and Putnam is now relying on sales tax revenue of almost 40% . That is not a good place to be.

I quote from the DEIS page 3-5 " It should be noted that the projected property and sales tax revenues are estimates as some of

the actual uses and future tenants at the center are not known at this time. The actual tax revenue generated by the proposed development may vary from the figures presented above based on the manner in which the property is actually developed and assessed."

3-9 Developer shows no data to support his contention that other local stores would benefit. When I worked in retail the phrase was destination malls. Meaning that people go to a destination to shop, they don't stop along the way. Indeed, increased traffic congestion may actually deter people from shopping in local stores. I would like to see an economic impact study be undertaken to see just how local stores would be affected. While the proposed project may generate jobs there is no data to show the impact of area retailers and loss of jobs and even ratables from the failure of local businesses.

3-11 Developer mentions retail jobs for high school students. Some of the announced potential tenants do not hire students under 18 years of age.

Now, I would like to speak about the children

The children are our future. From time immemorial, most societies want to give their children a better life than the generation before. That is our goal as well. Not mentioned anywhere in this document is the Lake Carmel Park District. A community made up of 2500 homes, approximately 8,000 residents that will abut this project if it is approved. Not mentioned anywhere is that our children are pedestrians (according to the DEIS, there are no pedestrians) and use our roads for walking, bicycle riding and for skating and skateboarding and to get to the beaches, the local stores and to visit their friends. They cross 311, they cross Terry Hill Road, they walk on South Lake Shore Drive and Brewster Road and Towners Road and every road in this community. That is one of the benefits of living in a park district-- We WALK. What impact will increased traffic have on their quality of life and their ability to have freedom to get around without being driven. Will that impact their health? Yes if you read the statistics on obesity.

What kind of life will we give them? One of sickness from diseases like asthma and its complications because we know that poor air quality causes asthma? Well water poisoned by septic effluent or not potable because of road salt or containing gasoline and other by products from the parking lots. A loss of our lake beaches and the swimming we all love.

In just the few instances I have cited, and this is just a few, the DEIS submitted by the applicant, any intelligent person can see, is full of assumptions, false logic, wishful thinking and misleading statements. And because, I suspect, the developer knows that his project is seriously flawed, we get a media campaign to try to sell it using all the buzz words he probably passed through a focus group.

What we need are politicians, planners and people to bring some clarity to this matter and arrive at creative solutions that will benefit both our communities, not make sacrificial lambs out of one. What we need is a project that will bring value to our homes and our park district and our community. But what is being proposed is nothing but poor planning with serious impacts on our way of life and neighbor pitted against neighbor. How different the story when it is a dog kennel proposed near homes in Patterson. So I am sad.

But I also have hope. I have noticed the interest and note taking by some of the planning board members. I have seen some of the members of the Planning Board be very caring and concerned about your residents at other meetings. And, I believe those serious about this huge responsibility are very decent and good people. So, I have Hope! I have hope that this planning board will do the right thing for us, for the safety, welfare and benefit of our community and our children in the Lake Carmel Park District and in the Town of Patterson.

Respectfully,
Judith Telyp

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SEP 20 2006
T.O.P.
PLANNING & ZONING

September 16, 2006

Mr. Rich Williams, Town Planner, Town of Patterson, NY
Members of the Patterson Planning Board
PO Box 470
1142 Route 311
Patterson, NY 10563

Dear Mr. Willams and Patterson Planning Board members:

Now that you've completed the two days of public hearings on the Patterson Crossing DEIS, I imagine that you must still scrutinize written comments from the public. Unfortunately, I shy away from opportunities at public oration so please bear with me.

Firstly, Mr. Williams, I wish to thank you for your even-handedness in delaying the entire process 6 months after your first rejection of the original DEIS in February. Regardless of motivation, it was a decision to give all of us, pro and con, more time to assimilate the anticipated changes to our community. Furthermore, to the members of the planning board, I imagine your job wrestling with this issue is overwhelming at times and I applaud your diligence and discipline throughout this process.

Were it not for the fact that your town supports one of the finest day care centers in all of eastern Putnam County, I would never be drafting this statement. Because my son began attending Tots n' Us at the age of 2 and continued on for 3 years until June of 2002, I became quite familiar with the connecting road between my home in Kent and the day care center. The pleasure I found in driving my son twice a day to and from Patterson on Route 311 was only offset by one near accident at the intersection of Route 311 and Route 164. I did a complete 360 but fortunately no automobiles were coming in either direction. My son was not in the car at the time. However, the experience left an indelible imprint as to the potential for danger at that intersection and brought about a higher level of respect for the 20 mph speed limit there.

Time passed and Noah began attending Kent Primary School. My fears about traveling certain sections of 311 waned until last fall when I witnessed a terrible automobile accident at the same intersection, this time involving 4 CCSD children during the middle of a regular school day. By this time, I

was bringing myself up to speed about the Patterson Crossing proposal. After reading the developer's initial environment assessment and discovering that an additional 1200+ vehicles/peak hour were anticipated on 311, I found it more difficult to accept that this was something easily mitigated.

Since my son was now riding one of the CCSD school buses, I became curious about how many other school buses used Route 311 daily. After witnessing too many cars scooting illegally past my son's pick up point when the bus was already at a full stop, I decided to call Ron Wilson, the assistant superintendent for business at 81 South Street. We spoke at length and had a good conversation about narrow roadways, bus repair expenses and the advantages of commercial development for Patterson, including the possibility that anticipated tax windfalls could go to road improvements.

Following our conversation, I decided to exercise a right which until October of last year I was quite unfamiliar with, the Freedom of Information Act. I FOIed Mr. Wilson for the exact number of school buses using some or all of 311 throughout the year. He'd already disclosed to me that the minimum number was 120. But he also stated that although the number was considerably higher, it would be to labor intensive to do this research and therefore my request was turned down.

I was frustrated by this attempt to attain information that I believe should be a part the public debate if the only entranceway to the retail center is the main and in many cases the only route for many of CCSD school buses.

My background is in social work. My wife and I received our MSW's at Fordham University in 1996. One of the requirements of graduation is that each candidate is fully familiar with the NY state social work code of ethics. That document requires social workers to be advocates for any population that is underserved, at risk or otherwise disenfranchised. An entire field of law – environmental justice – has evolved, protecting poor communities and communities of color from environmental abuse.

Acting not only from the self-interest perspective of a parent whose young child rode those buses, but also considering the school children who have no formal representation or voice in political decision making, I decided to explore this issue further. They are truly an under represented population at risk and I believe need the protection of environmental justice.

This past summer, I retained an attorney to FOI the CCSD assistant superintendent's office with a more specific request for all data, in electronic or written form, that allows the receiver to decipher how many buses use part or all of 311 daily. I believed that this would circumvent the laborious process of the office having to compile a report.

Once again, the request was not honored based upon the excuse that "Record is not maintained at this location" with no further assistance as to where those records are maintained and how they may be acquired.

To say the least, this is disappointing behavior on the part of a public servant as it creates the appearance of overt non-cooperation. It must ultimately lead the party requesting the information to surmise that this office does not wish the public to become aware of the full number of buses using 311 daily. Parents would realize the imminent danger to their children when you add 1200+ vehicles/peak hour to this already volatile mix of traffic.

Our local roads were never designed for the incredibly congested of traffic they currently support. At 9:00AM last Thursday driving north on 52 away from Fair Street in Carmel, I counted 92 vehicles (including EMS, police and 18 wheelers from the Patterson quarry) backed up to Towners Road. Route 311 is composed of narrow causeways, 5 way intersections, antiquated railroad bridges and 20mph hairpin turns. I believe that much of this infrastructure can simply not be mitigated away, no matter how diligent the NYSDOT effort is. The town supervisor of Patterson himself calculates that to correctly re-engineer the 164/311 intersection would cost over $20M and probably involve eminent domain.

I don't believe that what the CCSD superintendent's office did is legal and if by some chance it does fall within the narrowest confines of the law, it is certainly unethical and not in the best interests of our community. Were a proposed development at the 84 and 311 to have some truly intrinsic value for the future generations of eastern Putnam County, for instance a community college business or technical school, then the connection between the potential risks and the value of future benefits would be more in sync. As it is, the lure of cheap volumes of toilet paper and giant crates of anchovies at wholesale prices is still something that I believe most of us would be willing to drive a few extra miles for once a month, especially if it enhances the safety and welfare of our most prized possessions, our children.

I have never before been involved in an environmental issue so my voice speaks primarily from a humanistic, more emotionally intelligent way of doing business.

During the 18 months that I've been a social work public advocate arguing against the size and scope of this development, I have kept my focus on the human element in this debate. We have more than a financial obligation to our future generations. We need to pass on a legacy that we acted with full deliberation and with all the facts before us. In this light, I beseech you to find a means to obtain the information that I have failed to obtain twice. I not naïve enough to believe the information alone may sway your decision making process. I feel that were this number to be held up for public scrutiny, it might help us all to focus more on the things that really matter during our lifetimes.

Thank you for finding the patience and taking the time to consider this.

Sincerely,

William Ullman, LMSW
12 Sebago Road
Lake Carmel, NY 10512

Cc: Edward Schaffer, Esq.
Jessica Bacal, Esq.
Victor Grossman, Esq.

supervisor

From: Curt Vendel [curt.vendel@awecades.com]
Sent: Saturday, September 09, 2006 12:16 PM
To: supervisor@pattersonny.org; anordstrom@townofkent.org; amp2@ci.carmel.ny.us; supervisor@townofsoutheast-ny.com; sdavis@putnamvalley.com; pedc@computer.net; letters@lohud.com; tacnews@midhudsoncentralnews.com
Subject: Support for Patterson Crossing

Importance: High

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T.O.P.
SEP 1 1 2006
OFFICE OF SUPERVISOR

TB
TC
TD

I recently received the flyer in the mail from P.L.I. LLC and I personally STRONGLY SUPPORT Patterson Crossing. I am a resident now 5 years in Carmel. My wife and I moved into Centennial Ridge off of Hill & Dale Rd back in 2001. I love Carmel, and its surrounding area's which are filled with beautiful lakes and views.

I breathed a sigh of relief when the hilltop of Independence Way was developed with Home Depth, Kohl's and many other fine shops which have been ESSENTIAL for the community and area for its day to day living and productivity.

The parcel of land in question (Patterson Crossing) - being adjacent to RT84 really is only suitable for Commercial development as the noise and its proximity to RT84 precludes it from being used for any kind of future residential units. It being right next to the major roadway and service road affords the fact that tractor trailer deliveries will be confined to that area and will not be impacting local roadways. Patrons coming to/from will also take advantage of the R84 exit/entrance ramps to confine a majority of traffic to that area (though I would hope that the needed widening of the roadways, exit/entrance ramps, appropriate signals and perhaps speed bumps will be implemented.)

Now onto THE most important benefit of this commercial venture - reduction in taxes. The taxes within the area are painful to put in mildly and now there is talk of another 7%+ increase in taxes which is just going to continue to push out many homeowners. Many of my neighbors who first moved into Centennial Ridge at the same time as my wife and I have long since moved because their main issue has been the taxes and this trend is continuing. I know many homes have had a great deal of trouble being sold because potential buyers shy away from the outrageously high taxes.

Carmel/Kent/Patterson/Southeast/Brewster are at a milestone mark - either this area will move forward, grow and make something of itself with the much needed help of such commercial development and the badly needed tax revenue... or it will become a deserted wasteland, falling onto the weight of its own burdens and overtaxing its residents out of the community until the very heart of soul of the area has to pack up and move away, and along with it any current business and current revenues.

Move forward and put Putnam on the map, or continue down the overtaxing spiral and the area could end up like many communities that have been abandoned and falling off the map.

Lastly - Perhaps some other things should be put on the table - have PLI agree to annual payments for planting and maintaining tress, shrubs, flowers to be planted in the surrounding common area's of Patterson and to maintain the cleanup of the roadsides of the exit/entrance ramps (since heavy traffic will bring debris and unfortunately the occasional discarded liter). Also from the architectural standpoint - the Motif of these new shopping centers should reflect perhaps the heritage of the

area, Colonial framing and styling of pillars and framework, old style lamp posts and so forth, benches for sitting under shady trees... making the area warm, welcome and fitting. If the center is to become a part of the area, then it should have a unique and defining look to it and not just be "Yet another shopping center"

If you are going to continue to post signs stating "Shop Putnam" along the roadsides, then give people places to actually shop then! Putnam NEEDS Patterson Crossing, otherwise residents such as myself will drive East on RT84 and keep giving our sales tax revenue to Danbury, CT

Curt Vendel
Putnam Resident
Centennial Ridge, Carmel, NY

RECEIVED
SEP 25 2006
BY TOWN OF PATTERSON
TOWN CLERK'S OFFICE

MICHAEL WEITZNER
7 East Croton Drive
Kent Lakes, NY 10512
845-225-2586
845-225-2587 Fax

September 24, 2006

RECEIVED
SEP 25 2006
T.O.P.
PLANNING & ZONING

Town of Patterson
Planning Board
Patterson Town Hall
1142 Route 311 / P.O. Box 470
Patterson, NY 12563

Re: Patterson Crossing

Dear Board Members:

I addressed the public meeting on September 13, 2006. I suggested a way for the Planning Board to find a compromise solution to the Patterson Crossing issue.

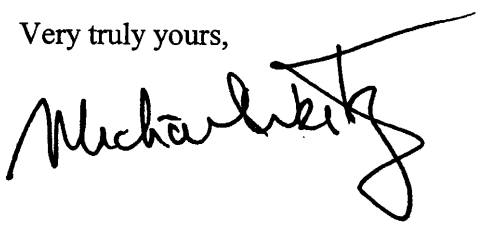
The appropriate way to obtain a compromise and secure a proposal that you could be proud to support is to reject the current project.

The DEIS report should be respected for what it is, an argumentative piece of marketing, rather than an unbiased report of an independent reviewer. The only way to obtain an unbiased report would be for the Board to hire its own experts. In addition, developers ask for whatever they think they can get away with, and then, as soon as construction commences, come back to ask for more. So, even with an affirmative vote now, this matter will not be over.

Obviously, this has been an extremely contentious issue. You have an obligation to make an informed decision about the project, and to leave your impact on the correct development of this rural community. You can safely reject this project with the knowledge that as a consequence of the relentless pressure for development, another project will be proposed tomorrow. In all likelihood, it will be Mr. Carmada who comes up with a more reasonable alternative.

Rejection of this proposal, which is entirely out of proportion to the site, will allow the Board to offer its input into creating an alternative proposal that will be more in character with the neighborhood, and still offer the benefits sought for the Town.

Very truly yours,



September 23, 2006

To the Patterson Planning Board,

I am writing this letter in huge support of the proposed Patterson Crossing. I have lived in the area for over twenty years and I am tired of going to Connecticut to do my shopping. The Brewster Highlands was a great asset to this area and I think they did a great job with it.

I would love to have a Costco, a sporting good store (such as Dick's or Sports Authority), an electronics store (such as Best Buy), a bookstore (such as Borders or Barnes and Nobles) and another restaurant (such as TGIF). This area has nothing like these stores. We do have Home Depot in the area and Linen & Things, so if the project needs to be reduced in size I think Lowe's and Bed, Bath, and Beyond should be the first to go.

At the present time, if I want to shop in Costco and the other stores in Connecticut, I must travel on Route 311 to reach I84. Why not travel the same route and arrive at my destination in five minutes instead of 25 minutes? My time and gas money are very valuable to me. I would rather go ten minutes round trip instead of fifty minutes. I know people are concerned about increased traffic on the area roadways. They have to travel the same route to reach Patterson Crossing which is directly off the highway as they would to travel to Connecticut. Therefore, I am a little confused. There might be an increase in the number of shoppers because people are so happy to have shopping at their convenience, but I am certain that you will plan for that and improve the roadways with turning lanes and traffic lights.

I attended the first meeting of the environmental draft review at the Patterson Recreation Center. I heard all the concerns that the residents have and I do feel some of them were very valid. I want Patterson Crossing very much but not at the expense of safety. Please be mindful of traffic safety and do the appropriate changes to the roadways. Would it be possible to make an exit directly off of I84 into Patterson Crossing? This probably would be very helpful. Also, the residents are concerned about water safety, sewerage, and runoff. I am not that familiar with any of these areas but I am confident that you plan to address all those issues and ensure that the environment will not be affected in those detrimental ways. As far as the blasting goes, please go out of your way to communicate properly with the people that it will affect because they seemed to be very upset about that.

The bottom line is that Patterson Crossing is a much needed addition to our area. I would like very much to "Shop Putnam" like the posted signs in our area suggest. I greatly look forward to the completion of Patterson Crossing. So please, move this project along and build it in a timely manner in the safest and most environmentally sound way.

RECEIVED
SEP 26 2006
T.O.P.
PLANNING & ZONING

Thank you,
Terri Weltman
Terri Weltman

BY E-MAIL
RECEIVED 9-23-06

9/22/06

Dear Patterson Town Planning Board,

I have been a resident of the town of Carmel for 20 years; in that time I have seen a large amount of building going on in our part of Putnam County. Unfortunately the majority of it has been high-end residential housing. Increases in shopping and commercial property have been almost non-existent. Former stores are sitting empty while all of us hop on I-84 to shop in Danbury or Fishkill. The new Brewster Highlands is always teaming with customers coming and going, while our stores sit empty and deserted.

Ninety-one new "Mcmansions" now surround my own small residential neighborhood. I look out my back yard and see houses everywhere. This year we flooded for the first time since our house was built over 60 years ago, we have lost 3 trees due to the increased wind caused by the loss of the tree buffer, they turned my cul-de-sac into a through street. These houses have not brought anything useful to my family, and myself and in fact contribute to my increase in school taxes due to the increased enrollment in the Carmel Schools. But I never have thought that I have to right decide what someone else should be able to do with his or her property. That is why there are zoning laws.

My taxes have risen from a total of $5,100 dollars total when I bought my current home in 1998 to $5,791.26 for my school taxes alone this year. I support the Carmel School budget and understand the increased need for money each year but we need an increase in the commercial property tax base to help off set the cost of our schools.

We need to provide appropriate facilities to our growing number of residents. With gas and utility prices soaring I can no longer just run to Fishkill/Danbury to pick up something I need. We need to stop building homes and start building stores to benefit our population.

I went to the town hearings for the Patterson Crossing. I feel for the people in the immediate vicinity of the propose project, they have real concerns, but I also feel that the developer has committed to work with the residents. Which is more than our neighborhood received as they built around us. I agree that the project will need to have the least amount of impact as possible and feel that the concerns need to be properly addressed. That said, I think that the owner of the property still has the right to build on his property. The property runs along Route 84 and is zoned commercial.

To my surprise many of the people that spoke at the town meeting were people that don't even live in Putnam County! I was shocked when a man who lives in Chelsea, NYC, who has access to any amenities he wants at his fingertips tell us what we should do to benefit him. Yes, we all deserve clean water, but the water is already being treated before anyone in NYC drinks it. The gentleman that lives in Cross River wants me to keep open spaces in Putnam, so he may come up to fish when he feels like it. Does he want to pay my increased taxes and increased gas costs to keep open spaces he doesn't even live near. Maybe he should leave the conveniences of his local shopping and spend more money on gas to shop up here at Putnam Plaza as we have to do to shop in Danbury and Fishkill. We all understand we live by watershed property that again is why there are zoning laws to protect the watershed. Another group brought up the problem of vermin. I lived in condo developments when I first moved to Putnam and guess what there were rats! I have had mice in my house, that is what happens when you live where we do. Most people I know have traps in their homes. Their hired lawyers and public engineers tried to prove their point at the meeting. But as we all know there are flaws to any study and biases on both sides

that need to be addressed. I feel that the only people whose voices should be "heard" are the people that will be using/impacted by the proposed project.

One resident brought up the fact that the developer has other projects that have still not been built. She felt that she had no way to compare or critique the projects. I am also upset that the ball fields and hotel complex haven't been built. I had hopes to watch my son play ball there or have my family that live far away have a close place to stay when they visit. She was right, but why are these projects not done? Is it because the developer is not trustworthy as implied or is it possibly a group of special interest people that are trying to stonewall the projects, is it just typical politics at work? The town voted to sell the land to the developer knowing what he was going to build! So why is there still no hotel?

Some people stated that the developer would build a "shoddy" project and then run and disappear. The developer has been building in Putnam for a number of years and he continues to plan to build here, so where is he running to hide?

Many of the residents were concerned about the blasting. I understand their concern, but if we never want to cause any noise pollution we will have to stop building houses, stop renovating the schools and stop repairing the roads. I hated the noise that occurred during the building of the homes in my neighborhood but did I have the right to stop their construction?

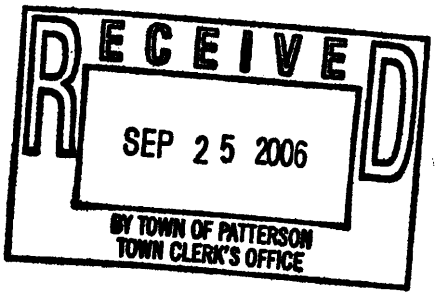
Increased traffic is a large concern. I find it hard to believe that there will be an increase of 1600-2200 cars per hour using the facility as stated by one of the speakers. Many people are already using 311 for access to Route 84 to drive to Danbury and Fishkill. The same people will use 311 to get to Patterson Crossing but spend their money in Putnam; using less gas and polluting the air less by driving less. As for child safety due to the increased use of Route 311, anyone letting his or her children play on Route 311 now is seriously putting their children at risk. The use of Echo Road as an emergency egress does need to be explored further.

Unfortunately most people don't like change, especially change that disrupts their lives but commercial development is important to our area. If you change the site to appease the people who are directly affected, than the people at the new proposed site will have issues and concerns that will prevent building in their area. Everyone wants the conveniences but no one wants them in their back yard. Someone will have to have them in their back yard at some point.

I understand your onerous task of making this decision. Unfortunately you can't please everyone. I only hope that you will make the decision that has the least negative impact and is most helpful one to the majority of people involved.

Sincerely,

Janet S. Wright
14 Lindy Drive
Carmel, NY 10512



GLENNA C. WRIGHT
7 East Croton Drive
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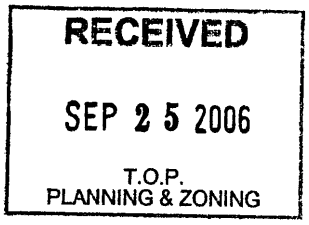
September 24, 2006



Town of Patterson
Planning Board
Patterson Town Hall
1142 Route 311 / P.O. Box 470
Patterson, NY 12563

Re: Patterson Crossing

Dear Board Members:

I have reviewed the DEIS report submitted for this project from the perspective of the project's impact on the cultural resources and esthetics of the area. This letter summarizes the discrepancies and failures found in the Cultural Resource Section, 4.13 of the DEIS report.

4.13.2 Visual Resources

This section misdescribes the general area as "rural development," emphasizing the development aspect as single-family homes, and individual commercial and retail establishments. In actuality the area is *rural*, that is lacking in development. The proposed retail center would introduce urban sprawl in a decidedly rural setting.

4.13-6 Potential Aesthetic Resources

In this section the DEIS makes the blatant misrepresentation that:

"There are *no* designated aesthetic resources or public facilities of cultural importance identified within the site viewshed that would be sensitive to changes in the visual environment." [Emphasis added.]

The DEIS completely fails to acknowledge the existence of the Lake Carmel Park District whose property line abuts that of the proposed site. There is no reference made to the Great Swamp that is contained within the proposed site and there is no mention of Lake Carmel that is less than 4/10 of a mile from the site entrance.

In light of the obvious impact this project would have on the Park District, Lake Carmel and the Great Swamp, it can only be concluded that this was an intentional omission. Clearly, this DEIS fails to fulfill its legal requirement of addressing the esthetic impact on these significant cultural resources.

Under General Municipal Law section 239-nn, the Town Board of Patterson has an obligation to address not just the esthetic impact, but also the global impact of the project on the Lake Carmel Park District in the neighboring Town of Kent, despite the fact that the majority of the project falls in the Town of Patterson. Every available resource indicates that the project would be significantly detrimental to the Park District.

4.13-9 Landscaping, Signage and Lighting

The Lake Carmel Park District and Lake Carmel are not referenced in this segment of the DEIS. There is no discussion of how the indented landscaping, lighting schematic and signage will impact these sensitive areas. There are no proposals offered to maintain the integrity of the Park and Lake Carmel. The report makes obvious that the proposal is to use the maximum possible lighting and signage, without consideration of the rural environment.

The landscaping intention of the applicant is to strip the hill of natural forest and replace the vegetation with a "Reservation Area" which will be comprised of a 25ft. wide strip of new evergreens combined with an 8 ft. fence along the property line of the site.

According to the Highway Traffic Noise Analysis and Abatement Policy of Guidance by US Dept. of Transportation (1995) (the"DOT Guidance"), "A barrier placed close to low scale single detached residential area has a severe adverse visual effect. A barrier close to a residence creates detrimental shadows, loss of sunlight and air circulation.. . . . . Vegetation, which is so high, wide and dense that it cannot be seen over or through, can decrease highway traffic noise." pp. 25- 28. A 200-foot width of such vegetation would effectively reduce noise by 10 decibels, which cuts in half the loudness of traffic noise.

Here, the preservation of at least a 200 foot wide strip separating the project from not merely residences, but a Park District, should be the minimum requirement. This will not only reduce noise levels, but also help preserve the character of a Park.

The DOT Guidance goes on to state, that even where the vegetation is not sufficient to offer sound abatement, that "If vegetation already exists, it can be saved to maintain a psychological relief, if not an actual lessening of traffic noise levels." p.30. In light of the rural forest setting of this project, building a barrier wall is a ludicrous proposal.

Some unresolved issues raised by the DEIS are as follows:

1. The Lake Carmel Park District, established circa 1939, borders the property line with proposed project. What provisions have been put in place by the applicant to preserve the Park District?

2. How may it be legally permissible to build a project of this type and scale adjacent to a New York State Park District?

3. What has the Town of Patterson done to protect the inhabitants of the Park District of the entirely negative impact of this project? Has the Town of Patterson met its legal responsibilities in this regard?

4. The DEIS report makes no reference to the impact the project will have upon Lake Carmel and its beach locations in terms of viewsheds, signage and lighting. Lighting and signage need to be addressed in both day and nighttime conditions. This omission should be rectified before a vote is permitted.

5. There is no discussion of how project will impact Park District locations as seen from Barrett Hill on Route 52 and other elevated areas in terms viewshed, signage, and lighting.

6. There is no artist rendering of the project or scale model of the project. The proponent's failure to utilize these common tools leads to the inescapable conclusion, that had they been created they would obviously illustrate the projects adverse impact upon Lake Carmel and the surrounding Park District.

7. The proposal to strip the entire site of forest is evidence that landscaping is to be inexpensive and expedient and is not sensitive to the Park District, Lake Carmel and the residences that are on the property line.

8. The Patterson Crossing Site is over 600 feet wide at the narrowest point and is 1200 feet at its widest point. The site consists of dense vegetation and therefore, a 200 foot buffer of existing dense vegetation could easily be retained.

9. Segment 4.13.1 dealing with Historic and Archaeological Resources noted that the characteristic of the topography combined with the Native American history of this region, the site location is thought to have average to above average potential for significant artifacts of both Native American and European American artifacts. What mechanism will be in place to monitor soil or site for any archaeological artifacts that may be discovered as more significant earth moving is involved? What does applicant propose to do if significant artifacts are discovered on site during the course of the construction?

Summary

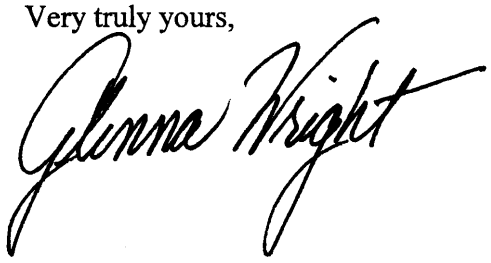
The obvious omission of the report to make any reference to, or discussion of, the impact upon Lake Carmel, Lake Carmel Park District and the Great Swamp indicates the developer's intention to build the biggest project possible, without any regard to the appropriateness of the setting.

The intention of the applicant to strip the site of an entire forest is testament that this plan is not suited for this site given the close proximity of Park District residences and sensitive ecosystems.

It would be in the best interest of both the Town of Kent and the Town of Patterson to reject this plan. This site should be developed with a smaller scale, more site appropriate retail

center that reflects both Towns atmosphere that would be inviting to walk or drive to. One that mirrors the pristine culture of country life. This site sensitive style of development would be an asset to both communities and would not place residences, a lake and a Park District in peril.

Very truly yours,



Edie Keasbey
180 Couch Road
Patterson, New York 12563
845-878-6169

September 13, 2006

Mr. Herb Schech, Chairman
Patterson Planning Board
P.O. Box 470
1142 Route 311
Patterson, New York 12563

Re: Draft Environmental Impact Statement and Site Plan Application.
Patterson Crossing Retail Center

Making a commitment for the equal environmental, economic and social well being for all the residents of Patterson and Lake Carmel.

Dear Mr. Chairman,

Once again a group of people are being targeted by a proposal that will impact their health, safety and social well being. These are the main issues we are dealing with tonight. They are also the most important rights our governments are challenged to provide for their constituents. Tonight our elected and appointed public officials are here to listen to the people fight for their right to their health, safety and well being.

Recently, a group of Patterson residents protested a large kennel proposed near their affluent residential neighborhood. They cited that the noise, more traffic, odors, and possible pollution from the animal's feces and urine would destroy their quality of life. The Town Board and the Planning Board took note of their complaints. They have proposed changes to Patterson's zoning code regarding large kennels assuring greater protection to quality of life issues for all Patterson residents. These changes have recently been adopted.

Not so in Lake Carmel! The proposed Patterson Crossing, all 439,000 sq. ft. of big box stores, will effectively destroy the quality of life and devalue the homes of thousands of middle and working class families in Lake Carmel and Patterson of which the vast majority have no vote in Patterson. This is an important socioeconomic issue that has not been discussed. This is an issue of *Environmental Justice*.

How Does EPA Define Environmental Justice?

This is a direct quote from EPA's Environmental Justice website.

"Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, culture, education, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair Treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal environmental programs. and policies."

"The environmental justice movement was started by people, primarily people of color, who needed to address the inequity of environmental protection services in their communities. Grounded in the struggles of the 1960's civil rights movement, these citizens from every facet of life, emerged to elucidate the environmental inequities facing millions of people." Ladies and Gentlemen, Environmental Injustice is no longer only an issue of color, the less affluent regardless of color, race, creed or life style are also targeted.

Lake Carmel is a thriving middle and low-income community that has provided a life style with the amenities of a Lake District community and they pay taxes for these amenities. Since the 1930s generations have grown up and prospered beside Lake Carmel. This is the kind of community that unselfishly gives back to their neighbors and town. Indeed, they are the backbone of every town. Lake Carmel is one of twelve lakeside developments in Putnam County and one of the two largest. It is now the only lake community next to industrial or commercially zoned areas and an interstate highway. The residents of Lake Carmel do not have the resources as the more affluent residents of Patterson. Even Mr. Tim Miller uses the words "luxury housing" when referring to Patterson on page 4.12-2 but no where in Kent. The homes in Lake Carmel are the family's largest asset and siting a large commercial project smack dab next to them will devalue their homes. Will the towns lower their taxes? This is now a quiet family community but not for long. If this project is not stopped Patterson and the applicant will be responsible for inflicting an environmental injustice on the residents of Lake Carmel.

Patterson Crossing cannot truly mitigate the impact of the Environmental Injustice of this proposal without offering an hugely downsized alternative use of the property that is acceptable to the Lake Carmel community, that compliments and enhances their community, and will not destroy this large middle and working class Lake Carmel community. No where in the DEIS is a real alternative discussed. Nowhere in the DEIS is this aspect of socioeconomic issues fully discussed and mitigation offered. The Town of Patterson and the applicant has no right to destroy the home values and quality of life of the thousands of families of Lake Carmel. As stated previously Lake Carmel has been here since 1930 and that is 76 years, long before there were huge highways and big box stores and the residents want it to continue to thrive. More than a decade ago

Patterson residents and many public officials fought a proposed 500-acre landfill in Patterson to be sited within a residentially zoned area and surrounded on three sides by the Great Swamp. If approved it would have destroyed our community. Today, I cannot understand how Patterson could consider turning around and inflicting the same damage on our Lake Carmel neighbors who stood with us in our fight. Ladies and Gentlemen, this is a serious issue. I sincerely hope you pay attention.

Two final notes.
On page 3-4, Mr. Tim Miller states "the substantial increase in commercial ratables would also come with no increase in the resident population or the number of public school students." It is well known that increased shopping opportunities draws more residential development and that means more students. It is an accepted fact that residential development costs more for the services they receive than the taxes they pay. Why is it that every year we hear the same mantra, that this or that development means less taxes to pay but our taxes keep going up—and alarmingly so this year? Mr. Alan Hevesi, New York State Comptroller, states that sales taxes should not be counted on to balance budgets for the reason that sales taxes are not a steady revenue source because they are subject to fluctuating good and bad economic times. Just to add to this discussion in the next few months Patterson will be permitting 36 new houses on the Burdick Farm subdivision and in the Carmel School district.

Mr. Tim Miller on page 4.12-7 states that the applicant "is not seeking any tax incentives which would be applied to this project." What about the stores, will they be seeking tax incentives that the taxpayers have to replace? If history has taught us anything we know they will grieve their assessments and probably win a decrease while we, the taxpayers have to make up the losses.

Thank you for the opportunity to submit these comments. I sincerely hope all the comments you receive between now and September 25th will be given honest and careful consideration.

Edie Keasbey

My name is Karl Rohde member of the Kent Town Board but representing myself here tonight. Last night as well as tonight there have been many good points made on both sides of the issue. I know that each of you will weigh the information and arrive at the correct conclusion. I do not envy you that task nor do I have the audacity to assume that I know what the correct decision is. What I am asking you is that when you deliberate you are not influenced by the hyperbole that has been in evidence from my town. The fact that Our County Executive's son works for Camarada should have nothing to do with your decision. There is no proof that his job is contingent upon the success of Patterson Crossing. Others in Kent have claimed that Senator Leibell's views are suspect because you named the road by your Town

Hall after him, even though he has not voiced his oponion on the project. Something we should have done to thank him for helping us to get beautiful town center. Others mentioned the tragic accident that happened recently at what will be the main exit for Patterson Crossing. While I have nothing but sympathy for the family it was not noted that the driver was 91 years old and that perhaps that had more to do with the accident then the traffic patterns and further ~~we~~ he failed to stop when coming to the intersection of the exit. Both points conveniently omitted in yesterday's testimony. Another person at a town board meeting made a nebulous accusation that several Patterson Crossing type projects were being investigated for corruption according to unidentified or unsubstantiated newspaper articles.

Articles that the speaker thought may have been in the papers but did not produce. No one else could recall such articles or investigations.

I am asking you to dismiss such feckless attacks and deal with the facts as they are presented to you. Please do not think that the great majority of people from Kent are like that the majority are honest and truthful people who are rightfully concerned with their well being and the well being of the town. Do not let those who use inflammatory and baseless statements influence you against the true and honest people of Kent. Make a decision based on the facts there is nothing more we can ask of you.

Last thing I would like to mention was that it was heartening when a member of you board asked the rude in insolent here last night to have respect for the views of others, a lesson that we might all learn from.

MY NAME IS JOE RUOCCO I LIVED IN LAKE CARMEL FOR 8 YRS AND SPENT 21 YRS AS A NYC POLICE DETECTIVE I WOULD LIKE TO START WITH CRIME AND SAFETY . LONG ISLAND HAD OVER 60 HOME INVASION ROBBERIES LAST YEAR ALL NEAR EXIT AND ENTRANCE RAMPS AND MORE THEN HALF NEAR SHOPPING COMPLEXES LIKE THIS ONE. ITS ONLY A MATTER OF TIME BEFORE PEOPLE LOOKING FOR SHORT CUTS TO AVOID TRAFFIC FIND YOUR BLOCK... WHO IS GOING TO PAY FOR FIRST RESPONDERS TO THE LOCATION OR TO THE TRAFFIC ACCIDENTS ON 311 . IF KENT IS THE FIRST RESPONDER ,IS THE TOWN OF PATTERSON WILLING TO REIMBURSE THE TOWN OF KENT . AFTER ALL THE RESIDENTS OF KENT PAY TAXES FOR A POLICE DEPT. WHICH PATTERSON DOES NOT HAVE ... WE WILL NEED TRAFFIC LIGHTS AND WIDER ROADS TO AVOID THE TRAGIC ACCIDENT WHICH OCCURRED ON THURS. SEPT 7 WHICH HURT 4 PEOPLE AND KILLED 2 . THESE IMPROVEMENTS SHOULD BE PAID FOR BY THE DEVELOPER . IF IT ISN'T IN PLACE BEFORE THE PROJECT IS BUILT THEN IT WILL BE THE TAX PAYERS OF THIS COUNTY WHO WILL HAVE TO FOOT THE BILL..... RT 311 CAN NOT SUPPORT THE AMOUNT OF TRAFFIC THAT IS BEING TALKED ABOUT .1500 CARS PER PEAK HOUR . THE CAUSEWAY OVER LAKE CARMEL THE INTER SECTION AT 311 AND 164 AND THE ONE LANE RAILROAD BRIDGES ON 164 AS WELL AS THE INTERSECTION AT I84 AND 311 MUST BE IMPROVED BEFORE THIS PROJECT GOES FORWARD . ALSO ECHO DR BEING USED AS A EMERGENCY EXIT MAKES NO SENSE IT IS A NARROW ROAD ON A STEEP GRADE WHICH HAS PARKED CARS AND MANY FAMILIES LIVING ON IT , IT LEADS TO TERRY HILL RD WHICH IS NO BETTER OFF ....I DO NOT UNDERSTAND HOW THE HEAD OF PUTNAM

COUNTY EMERGENCY MANAGEMENT AND THE PUTNAM COUNTY SHERIFF CAN APPROVE THIS AS SAFE A VIABLE EGRESS FOR SO MANY VEHICLES IN A EMERGENCY ..

TAXES; BEFORE WE DESTROY 90 ACRES OF LAND BECAUSE WE THINK THAT IT WILL LOWER OR STABILIZE OUR TAX BURDEN WE JUST HAVE TO LOOK AROUND AT LONG ISLAND ,NEW JERSEY ,WESTCHESTER, ROCKLAND AND OUR NEIGHBORS IN SOUTHEAST ALL HAVE DEVELOPMENTS LIKE THIS AND NONE HAVE LOWERED OR STABILIZED THERE TAXES ALL HAVE FACED INCREASES IN THERE TAXES . AND ALL THEY HAVE TO SHOW FOR IT IS TRAFFIC AND POLLUTION .. YOU CAN NOT BASE YOUR BUDGET PLANS ON SALES TAX .. BESIDES HALF OF THE ITEMS SOLD IN COSTCO ARE FOOD ITEMS AND THERE IS NO SALES TAX ON FOOD.. ALL THESE TYPES OF STORES HAVE A HISTORY OF FIGHTING THERE PROPERTY TAX ASSESSMENTS AND UNDER REPORT THEIR SALES IN AN ATTEMPT TO SAVE MONEY , AND THEN TAKE THERE PROFITS OUT OF THE COMMUNITY ..I HAVE TWO ARTICLES , THAT STATE COSTCO EXPECTS THERE FOURTH QUARTER PROFITS TO BE BELOW ESTIMATES ,BECAUSE SALES HAVE SLOWED AND BLAME HIGHER GAS PRICES ..THE OTHER IS ABOUT LOWES THAT STATES THAT THEY CUT THERE FULL YEARS EARNINGS OUTLOOK BECAUSE OF SLUGGISH SALES ,DUE TO HIGH ENERGY COSTS AND THE SLOWING HOUSING MARKET...YOU WILL ALWAYS BE PAYING TAXES WHETHER IT'S HIGHER PROPERTY AND SCHOOL TAXES, RASING THE SALES TAX OR IMPLEMENTING A INCOME TAX ANY WAY YOU SLICE IT YOU WILL BE PAYING MORE....

JOBS; PUTNAM COUNTY HAS THE LOWEST UNEMPLOYMENT RATE IN THE STATE OF NEW YORK, THERE ARE PLENTY OF JOBS AVAILABLE IN THE AREA THAT ARE NOT BEING FILLED .. THE JOBS BEING OFFERED HERE ARE LOW PAYING JOBS WITH NO BENEFITS OR FUTURE..THE PEOPLE THAT WORK AT THESE JOBS CAN NOT AFFORD TO LIVE IN THE COUNTY AND OWN A HOME .. WHAT WE NEED ARE COOPERATE JOBS THAT PAY HIGHER AND HAVE BENEFITS AND A FUTURE ...I HAVE HEARD PEOPLE SAY THAT IT WOULD BE GOOD FOR THE TEENS, THAT THEY COULD GET JOBS AT THESE STORE .. LOWES AND COSTCO HAVE AGE LIMITS OF OVER 18 TO WORK IN THERE STORES .MOST OF THE YOUNG ADULTS OVER 18 IN THIS COUNTY HAVE TO LEAVE THE AREA TO ATTEND COLLAGE , BECAUSE WE DO NOT HAVE A COLLAGE CAMPUS OR A COMMUNITY COLLAGE IN PUTNAM COUNTY ...ALL OF THESE JOBS ARE DEAD END JOBS WITH A HIGH TURN OVER RATE..AND AS FOR OUR LOCAL TRADESMAN AND UNION PEOPLE THERE IS NO GUARANTEE THAT THEY WILL GET ANY OF THE CONSTRUCTION JOBS AND IF THEY DID IN TWO YEARS THEY WOULD BE UNEMPLOYED AGAIN .....

I FIND IT IRONIC THAT THE TOWN OF PATTERSON AND THE TOWN BOARD FOUND THAT A DOG KENNEL FOR SICK AND INJURED DOGS IS A QUALITY OF LIFE ISSUE FOR THE PEOPLE WHO LIVE IN THE AREA AND THAT THE LIGHTS AT THE BALL FIELD ON CORNWALL HILL RD. ARE BOTHER THE RESIDENCE IN THAT AREA, THAT THEY WANT TO SHORTEN UP THE GAMES .. BUT TO BUILD A 90 ACER DEVELOPMENT IN THE BACK YARD OF 2000 HOMES IS NOT A PROBLEM...

IN THE DEIS REPORT THEY STATE A LOT OF COULD BE'S , MITE'S AND MAYBE'S WE CAN NOT APPROVE A PROJECT THIS SIZE ON MAYBE'S ..WE MUST HAVE GUARANTEES FROM THE DEVELOPER ..BECAUSE ONCE THE PROJECT STARTS WITHOUT THEM IT WILL BE THE TAX PAYERS WHO WILL HAVE TO FOOT THE BILL...I SUGGEST THAT MONEY BE PLACED INTO AN ESCROW ACCOUNT TO GUARANTEE THAT THE MONEY WILL BE THERE IF AND WHEN IT IS NEEDED..

EVERYTHING MR.CARMADA HAS GIVEN TO THIS COUNTY IN THE WAY OF DONATIONS HAVE STRINGS ATTACHED THEY ARE DESIGNED TO WIN FAVORS AND INFLUENCE DECISIONS...EVEN THE NEW FIRE TRUCK WHICH WAS PROMISED TO PATTERSON HAS A STRING ATTACHED BECAUSE ANY AREA IN WHICH A COSTCO IS BUILT MUST HAVE A SPECIAL PIECE OF FIRE APPARATUS IN PLACE.. WHO WILL PAY FOR ITS MAINTENANCE AND REPLACEMENT ..NOTHING IN THIS WORLD IS FREE THERE IS A PRICE TO PAY FOR EVERYTHING ..I AM NOT WILLING TO GAMBLE WITH MY CHILDREN'S HEALTH OR FUTURE I CHOSE TO LIVE IN PUTNAM COUNTY FOR IT'S HIGH QUALITY OF LIFE FOR MY CHILDREN ,THAT QUALITY OF LIFE IS BEING THREATEN BY THIS PROJECT....

AS A SMALL BUSINESS OWNER I UNDERSTAND THAT MR CARMADA IS JUST DOING WHAT BUSINESS MEN DO ,TRING TO MAKE AS MUCH MONEY FOR HIS

INVESTORS AND HIMSELF .. I WONDER HOW MUCH FINANCIAL INTEREST THE POLITICIANS HAVE IN THIS PROJECT ...THIS FIGHT IS NOT A PERSONAL ATTACK AGAINST MR.CARMADA IT IS STRICTLY BUSINESS ..I DO NOT HOLD HIM RESPONSIBLE ..I HOLD THE POLITICIANS RESPONSIBLE AND THAT I WILL REMEMBER IN NOVEMBER.....

MAYBE THE NEW SLOGAN FOR PUTNAM COUNTY SHOULD BE "" PUTNAM COUNTY WERE THE CITY BEGINS"

9/14/06
Submitted at meeting

MY NAME IS JOE RUOCCO I WOULD LIKE TO FINISH WHAT I STARTED LAST NIGHT , BUT FIRST I WOULD LIKE TO COMMENT ON SOME OF THE THINGS THAT WERE SAID LAST NIGHT ... ONE RESIDENT STATED THAT WE SHOULD NOT BE CONCERNED ABOUT RATS,, I DON'T KNOW WERE HE LIVES BUT I DO NOT HAVE RATS IN OR AROUND MY PROPERTY AND DO NOT WANT THEM..ALSO IT WAS STATED THAT THEY DID NOT APPRECIATE PEOPLE FROM NYC COMMENTING ON THIS PROCESS ..LIKE IT OR NOT NYC OWNS A LOT OF PROPERTY IN THE AREA AND ITS THERE TAXES THAT PAID FOR IT.... THAT GIVES THEM A VESTED INTEREST IN THIS PROCESS ..AFTER ALL ITS THERE DRINKING WATER... THIS IS A GOOD EXAMPLE OF WHAT HAPPENS WHEN PEOPLE SELL THE LAND WITHOUT THINKING ABOUT THE FUTURE ...NOW WE HAVE OUTSIDERS CONTROLLING OUR FAITH ....

THEIR WAS TALK ABOUT THE SIZE OF THE SEPTIC FIELDS ON THIS PROPERTY . I KNOW A LITTLE ABOUT SEPTIC'S AND THE FIRST THING IS THAT YOU CAN'T PUT A SHOVEL INTO THE GROUND WITH HITTING A ROCK AND THE LAST TIME I CHECKED ROCKS DO NOT ABSORB WATER THERE IS ALSO A LOT OF CLAY IN THE GROUND WHICH IS ALSO BAD FOR SEPTIC FIELD'S THE DEVELOPER SAYS THAT THE WATER, LIKE THE ANIMALS ON THIS PROPERTY WILL GO UP AND OVER I84 BUT AS ANY SCHOOL KIDS KNOWS IS THAT ,WATER RUNS DOWN HILL AND FINDS THE PATH OF LEAST RESISTANCE .. NOW THAT CONCERN ME BECAUSE „THAT WATER IS GOING TO FIND ITS WAY INTO THE SEPTIC FIELDS AND WELLS OF EVERY HOME DOWN HILL FROM THIS SIGHT CAUSING UNDUE PROBLEMS FOR

THE RESIDENCE. SOME OF THOSE WELLS ARE NOT DEEP AND YOU CAN NOT COUNT ON THE NATURAL PROCESS THAT THE GROUND WATER WILL PURIFY ITSELF ...WHO KNOWS WHAT WILL BE PLACED DOWN THE DRAINS OF THESE STORES CLEANING FLUIDS ,PESTICIDES DO THEY CONTAIN HEAVY METALS OR CARCINOGENS WILL IT CONTAMINATE THE WELLS ..AFTER ALL UNLIKE THE PERSON WHO SPOKE LAST NIGHT SAYING THAT HE WAS TIRED OF HEARING PEOPLE BEING CONCERNED ABOUT THE DRINKING WATER ..CLEAN WATER IS VERY IMPORTANT.... ASK ANY ONE FROM AFRICA OR MEXICO ..THE PUTNAM COUNTY HEALTH DEPT HAS RULES WHEN IT COMES TO PLACING A SEPTIC SYSTEM ON ONES PROPERTY ....THE FIELDS MUST BE 100 FT UPHILL FROM A WELL ~~AND~~ OR 200 FT DOWN HILL, ALSO YOU NEED SPACE FOR THE PRIMARY FIELD AND A 100% RESERVE..THAT MEANS YOU NEED TWICE THE SPACE AVAIBLE ,,,8 FOOTBALL FIELDS NOW HAVE TO BE 16 FOOTBALL FIELDS ... I WOULD LIKE TO KNOW WHAT THE DEPT OF HEALTH HAS TO SAY ABOUT THIS PROJECT..

YOU MUST BE VERY CAREFUL WHEN CHANGING ZONING RULES TO FIT THIS PROJECT ,OR SIDE STEPPING THE LAW ,BECAUSE WHEN YOU SET NEW PRECEDENCE YOU OPEN YOURSELF UP TO LAW SUITS FROM THE NEXT DEVELOPER WHO WANTS TO BUILD IN PATTERSON WHAT'S GOING TO STOP THEM FROM BUILDING ON ALL THE OPEN LAND FOR SALE IN THE TOWN .....YOU CAN'T TELL THEM THAT THE RULES HAVE CHANGED BACK FOR THEM... ALL IT WILL TAKE IS A GOOD LAWYER AND YOU'LL HAVE MORE DEVELOPMENT THEN YOU MAY WANT..THE ENVIRONMENTAL LAWS THE COUNTY RULES AND YOUR

OWN BUILDING CODES ARE QUITE CLEAR THAT THIS IS TO MUCH PROJECT FOR THAT SIGHT AND NEEDS TO BE STOPPED....

Patterson Crossing Traffic Study Testimony

Oreon Sandler, P.E.
Acting Executive Director, Croton Watershed Clean Water Coalition

I am Oreon Sandler, a P.E., working as Executive Director for CWCWC.
This Patterson Crossing application is unworkable:

a. There is no commitment to fund the necessary off-site highway improvements to support the development, and
b. The development's onsite transportation infrastructure is significantly undersized for the proposed 434,050 square feet retail space, and
c. Near-by residents will suffer negative consequences and congestion, which will eventually lead to local town and state DOT action to fund and repair these narrow roads.

Consequently, the application as proposed will have a significant adverse impact on area traffic operating conditions, and the application should be denied.

In lieu of outright denial, a supplemental Environmental Impact Statement should be required. Because the traffic study for Patterson Crossing underestimated the volume of traffic that will be added to the surrounding roadway network, it is recommended that the entire traffic analysis be revised and resubmitted as part of an SEIS, along with other information that might have been misrepresented in the DEIS.

Revised Traffic Study should:

a. Include a revised analysis to reflect 15% pass by credit during the weekday peak hour and a 10% pass by credit during the Saturday peak hour.

b. Include a revised analysis to determine whether the internal intersections will have sufficient capacity to accommodate the additional internal traffic and holiday-season traffic including left-turns on the electronics and sporting goods store approaches to the main access road, to ensure that the site's main access road will not fail and prevent motorists from using it to enter or exit the facility.

c. Analyze the signalized intersection of Towners Road and NY Route 52 since 19% of site traffic is projected to pass though this important intersection.

d. Contain ramp capacity analyses of the I-84 ramps to and from State Route 311 since more than half of the traffic generated by the project is projected to use interstate I-84.

e. Contain a revised analysis of the intersection of NY Route 311 with NY Route 52, where there is effectively only one lane on westbound NY Route 311 as it approaches NY Route 52. This was incorrectly assumed that there were full left-turn and right-turn lanes on the causeway approach to NY Route 52.

f. Contain a revised analysis of the intersection of Horse Pound Road with NY Route 52 indicating that 19% of site traffic is passing through this intersection. The DEIS analysis assumed that 10% of project traffic would materialize on NY Route 52 somewhere between Barrett Hill Road and Horse Pound Road.

g. Contain a revised analysis of the intersection of NY Route 311 with NY Route 164 indicating that 10% of site traffic will travel to and from Patterson, Putnam Lake and the western portions of New Fairfield (CT) on NY Route 164. It is estimated that the difference between the 3% used and the 10% recommended will come from the west on I-84 and 40% from the east on I-84.

h. Review individual accident reports (form MV 104) available from the Millbrook office of the New York State Police Accident Records Bureau in-order to establish a realistic traffic problem basis from the past in this area. This is to specifically identify potential remedial measures at each of the following locations, which appear to be less safe presently, and thus, have the potential to be impacted by projected traffic based on elevated accident rates, relative to the volume of traffic they serve:
   i. NY Route 311 at Terry Hill Road.
   ii. NY Route 311 at Luddington Court, which is a very low volume street yet with 4 accidents.
   iii. NY Route 311 at the I-84 ramps
   iv. NY Route 52 from milepost 1035 to 1038 (6 accidents/10th mile)
   v. NY Route 52 from milepost 1042 to 1044 (5.5 accidents/10th mile)
   vi. NY Route 52 at Towners Road
   vii. NY Route 52 from milepost 1048 to 1050 (6 accidents/10th mile)

The SEIS should either propose a second driveway to access the project site or dramatically reduce the size of the project to a level which can be sustained by a single driveway and which is consistent with current engineering and planning standards and philosophies.

The SEIS recommended should contain a commitment from the applicant to fund completion of the necessary mitigating measures. Alternatively, the resolution of approval for the subject property should require that Certificates of Occupancy for the development would be conditioned upon the completion of these improvements by others.

These data were compiled by John Canning, of Adler Consulting, White Plains, New York.

Thank you.

September 14, 2006

By Hand Delivery
Honorable Michael Montesano, Acting Chairman and
Members of the Patterson Planning Board
Patterson Planning Department
P.O. Box 470
1142 Route 311
Patterson, NY 12563

Re: The Patterson Crossing Retail Center
Petition in Support

Dear Acting Chairman Montesano and Members of the Planning Board:

Last night Tony LoMeli, as a member of the Board of Directors of the Patterson Chamber of Commerce, delivered to the Town Planner Richard Williams a Petition in Support of The Patterson Crossing Retail Center signed by approximately 500 people. Mr. LoMeli requested that this Petition in Support of the Patterson Crossing Retail Center be submitted to your Board for the record.

As you may recall, at the scoping session for the Draft Environmental Impact Statement Mr. LoMeli submitted to your Board another Petition in Support of The Patterson Crossing Retail Center signed by approximately 1,000 people. **The second Petition in Support submitted last night therefore brings the total number of signatures in support of The Patterson Crossing Retail Center to approximately 1,500.**

We respectfully ask that your Board consider this very substantial support for The Patterson Crossing Retail Center in evaluating such application, and along with the comments made at this public hearing regarding project need and benefits.

Sincerely,

Marsha M. Thompson

Marsha Thompson
President of the Patterson Chamber of Commerce

CWCWC

CROTON WATERSHED CLEAN WATER COALITION

Mission:

CWCWC is an alliance of organizations and individuals joining together for a common goal of preserving, protecting, and improving the quality of the waters in the Croton watershed and to providing alternatives to filtration.

9 Old Corner Road
Bedford, New York 10506
Ph: 914-234-3179
914-234-6470
Fax: 914-234-6139
E/mail:
marianr451@aol.com
crotonwshed@aol.com
Web site:
www.newyorkwater.org

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Manhattan Borough
David Ferguson
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To: Town of Patterson Planning Board
Re: Patterson Crossing Retail Center DEIS

Public Hearing, September 13, 2006

My name is Marian Rose. I'm president of the Croton Watershed Clean Water Coalition (CWCWC).

Historically, our purpose has been to preserve the quality of our drinking water, here in the Croton Watershed. Thoughtless development can pollute our streams, our groundwater and reservoirs on which we depend here locally, and which also supply NYC residents with as much as 30% of their drinking water in times of drought. This common concern is shared by our individual members and by our over 50 member groups here in Putnam, Westchester and NYC.

We believe that this proposed development will have devastating impacts on the quality of life of residents throughout this area. CWCWC has confronted dozens of developments in the Croton Watershed. We have never encountered one as inappropriate or as potentially damaging as this one. Because of these concerns, CWCWC has engaged several expert consultants. Our opposition to this development is based on sound knowledge and sound reasoning. We shall be submitting these expert comments to the lead agency, in conjunction with our own written comments.

Coalition members: Audubon Society: Bedford, Bronx River/S. Shore, Central Westchester, Saw Mill, Scarsdale,Yonkers · Bedford Barrow · Commerce Block Association · Bedford Garden Club · Catskill Heritage Alliance · Chelsea Reform Democratic Club · Citizens for Equal Environmental Protection (CEEP) · Clearwater · Coalition for the Preservation of Rolling Greens · Concerned Citizens for Open Space · Concerned Residents of Carmel-Mahopac · Concerned Residents of Kent · Concerned Residents of Southeast · Council of Chelsea Block Associations · Croton Heights Community Association · Dickerson Mountain Preservation Association · Diocesan Missionary & Church Extension Society · East Harlem Council for Community Improvement · East Harlem Restoration Project, Inc. · El Faro Beacon Community Center · Episcopal Diocese of New York · Federated Conservationists of Westchester County (FCWC) · Friends of the Great Swamp (FrOGS) · Friends of the Clearwater - NYC · Friends of the Clearwater · George Nikitovich et al · Goldens Bridge Community Association · Grassroots · Hands Across the Border (HAB) · The HDFC Council · Hudson River Sloop Clearwater · Jr. League of Westchester-on-Hudson · Huntersville Association · Lake Dutchess Association, Inc. · Local Involvement for the Environment · Metropolitan Council on Housing · Movement Studies Institute · Neighborhood Housing Services of NYC · Putnam County Tree Advisory Commission · Putnam County Coalition to Preserve Open Space · Queens Civic Congress · Regional Review League - Bedford · Rusticus · Sierra Club, Atlantic: Lower Hudson, Mid Hudson, NYC, Ramapo-Catskill · Southern Yorktown Homeowners' Association · Trout Unlimited - Croton Watershed chapter · Westchester Land Trust · Westchester Trails · Yorktown Land Trust

In our opinion, the impacts from this proposed development will be so severe that we urge the Patterson Planning Board, the lead agency, to simply deny a permit for the development as it stands and to demand an SEIS for a drastically reduced proposal.

Tonight, several of our members and expert consultants will be speaking about the unworkable traffic plan; the deficient proposal for sewage treatment; the poorly mitigated noise impacts; the inadequate stormwater plan. Furthermore, some of the legal problems with this proposal will be discussed by our attorney, Jim Bacon.

I'd like to summarize just a few of the many concerns that CWCWC has with this project.

We are often told that the developer has rights. We agree – of course a developer has rights. But, mere ownership of a piece of property does not confer the right to harm one's neighbors. Yet, this is precisely what this development will do.

- This development can cause these local country roads to become dangerously congested. This will happen unless the developer pays in a timely fashion and in full for the needed improvements at the various traffic intersections and elsewhere along the roads, as described in the DEIS. Simply because he owns the property, the developer has no right to cause road congestion that will most likely only be mitigated at some later date, when the developer is gone, leaving the cost and the tax burden to the local residents.
- Over 60 acres of a thickly forested area will be eliminated. Among other superb benefits, forests absorb sound. This forest will be replaced by a huge shopping mall that will generate noise from tens of thousands of cars and trucks. Simply because he owns the property, the developer has no right to significantly increase noise levels in the neighboring quiet, semi-rural community.
- The developer is proposing a highly questionable underground system for treating 11,000 gpd of raw sewage that could eventually, by the admission of his own consultant, reach the groundwater and affect the neighbors' properties. Simply because he owns the property, the developer has no right to put the neighbors' wells at risk.
- The developer is submitting a manifestly inadequate stormwater pollution prevention plan that uses inaccurate input data and fudges

the final results so that no conclusions can be drawn regarding an increase or decrease in phosphorus pollution to Lake Carmel, or the Middle Branch and the East Branch Reservoirs. Using the accurate input data, phosphorus levels will increase. Under the new Phase 2 stormwater regulations, the Towns of Patterson and Kent will then be obliged to install stormwater devices to reduce the phosphorus. Simply because he owns the property, the developer has no right to cause this extra cost to the towns which translates into an extra tax burden on the residents.

- The proposal calls for the destruction of over 60 acres of a steeply-sloped, thickly-forested hill, an integral part of the scenic Hudson Highlands, and deface it with 34 acres of impervious surfaces that include extended parking lots and Big Box buildings. This will necessitate the drilling and blasting of 447,500 cubic yards of soil, 119,000 cubic yards of rock, which together would cover a football field to a depth of 106 feet. According to the applicant, the work will be carried out six full days per week; mitigation will consist of not working on Sundays and holidays -- and this would not even serve some real public need such as a school or hospital. Simply because he owns the property, the developer has no right to ruthlessly destroy acres of superb scenery and forested land that protects the neighboring lake community from the noise and pollution of a major highway
- And finally, the developer has no right to cause a decrease in the value of neighboring homes by destroying the peace and quiet and beautiful landscape that these homeowners now enjoy, and replacing it with impervious surfaces, noise, air and water pollution, and traffic congestion.

We urge the lead agency to deny this devastating proposal and to demand that the applicant prepare an SEIS together with plans for a drastically reduced project.

Marian Rose

Marian H. Rose, Ph.D.
President, CWCWC

Appendix C

PUBLIC HEARING TRANSCRIPT

STATE OF NEW YORK

COUNTY OF DUTCHESS
- X

Public Hearing:

In the Matter of Patterson Crossing

- X

DATED: September 13, 2006
Patterson, New York
6:00 p.m. - 9:40 p.m.

Patrick M. DeGiorgio, Reporter

PUBLIC HEARING

MINUTES

APPEARANCES:

Planning Board
Mike Montesano, Vice-Chairman
Shawn Rogan, Board Member
Maria DiSalvo, Board Member
Dave Pierro, Board Member

Melissa Brichta, Secretary

SANTANGELO, RANDAZZO & MANGONE, L.L.P.
Attorneys for Town of Patterson
151 Broadway
Hawthorne, New York 10532
BY: ANTHONY J. MANGONE, ESQ.

MR. MONTESANO:

Good evening, everyone. Welcome to the Town of Patterson public hearing for the Patterson Crossing proposal. We would like to welcome you to the public hearing and introduce first Maria DiSalvo, acting Chairman, Michael Montesano, Shawn Rogan, and acting vice-chair, Davis Pierro and down at the end of the table, Melissa Brichta, our secretary, as you remember from the last meeting is in charge with getting all of the minutes of this meeting to make sure we have a good record of this evening.

First and foremost I'd like to take a moment for everyone to take a look around the room and acknowledge the location of the emergency exits. There are at least three exits behind you as well as one behind the daosk up here. If the alarm sounds, move quickly towards those exits. Also to your right-hand side towards the back of the room are the bathrooms. Please feel free to get up and use the bathrooms. At this time please take the opportunity to either turn

off all cell phones and pagers or put them to the vibrate mode so that we don't have any disturbances this evening.

Many of you may recall being in this room one year ago when we did a public hearing on a scoping document for this project. You may recall also that the main reason for that meeting was to get your concerns so that the planning board could draft a scoping document which is what was done after that meeting. Those concerns were taken by the applicant and a Draft Environmental Impact Statement was prepared to address your concerns. That was the whole point of having you come out and speak about your concerns so that we could make sure they get addressed appropriately. The reason we are here tonight is to hear your concerns again with respect to that Draft Environmental Impact Statement. We would like to hear your concerns specific to that document, either in areas that you feel need more work or areas that you don't understand, and your concerns and conversations should be

geared towards that document. That's why we are here tonight.

It came to the planning board's attention just for the audience's edification that one of the requirements for posting the signs at the project site over on Route 311, that the sign was not placed within certain time frames that are required by SEQRA. We have spoken with our legal counsel and given the fact this is not a site plan review tonight, this is part of the SEQRA process, we feel it's prudent to continue with this public hearing and continue with the meeting this evening.

Public comments other than tonight will also be tomorrow night. We will start also at 6 p.m. The intent is anyone who did not get a chance to speak tonight will be heard at that time and also anybody who is not present tonight, of course, who couldn't make it this evening can speak then.

We understand, the planning board clearly understands, this is a project that there is great passion, on both sides of the

board, whether you are for or against this project. We understand you are passionate about it. We understand and appreciate your input. Tonight is more specifically about your concerns. It's not about the applicant giving a speech tonight or anything like that. This is your time to let us know what you are feeling. We are looking forward to hearing those concerns this evening.

The meeting this evening obviously started a little bit after 6. We intend to finish up at 11. That means if we finish up at 10 p.m. then we are out of here at 10 and see you tomorrow night. We would not like to go past 11 p.m. We understand that you all have full-time jobs.

The rules for this evening, just so everyone is clear, if you would like to speak this evening, make sure you sign up at the front desk which you passed most likely when you entered into the building. We will take those names in the order they were given and we will call those names. You will be given five minutes to speak. We encourage you to

also submit your comments in writing. You don't have to speak tonight if you are not comfortable speaking in front of a large audience. We would appreciate you submit your comments in writing. Written comments will be accepted until eleven days from tomorrow night which is September 25th.

At this time I'd like to ask the secretary to read the public notice.

MS. BRICHTA:

Notice is hereby given by the Town of Patterson Planning Board of a public hearing to be held on Wednesday, September 13th, 2006, and Thursday September 14th, 2006 from 6 p.m. or soon thereafter as may be heard, at the Patterson Recreation Center Gymnasium, 65 Front Street, Patterson, Putnam County, New York to receive comments on the Draft Environmental Impact Statement and Site Plan Application for the Patterson Crossing Retail Center. The project proposes the construction of a 434,050 square feet retail center on a 90.46 plus or minus acre parcel which lies within the Town of Patterson and

Town of Kent. The project is located near the intersection of Interstate 84 and New York State Route 311. Written comments on the Draft Environmental Impact Statement and Site Plan Application will be received by the planning board, P.O. Box 470, 1142 Route 311, Patterson, New York unti September 25, 2006.

MR. PIERRO:

I'd like to call Laura Bromfield at 6:15 p.m., approximately.

MS. BROMFIELD:

My name is Laura Bromfield. I live at 24 Walden Road in Lake Carmel, New York. My home is in the neighborhood that is most directly affected by Mr. Camarda's proposed Patterson Crossing and it scares me. In our neighborhood, our homes receive their water through wells. Water runs down a hill, generally it doesn't run up. The proposed Patterson Crossing sits at the top of our hill. As it is, there have been times when many neighbors have suffered with their water and they have had to drill deeper and deeper. I know they say it can be done, but I live

there and I see what's happening around me. I'm afraid if I lose my water what happens to my family? If we remain in the home, our water goes, we will not be able to sell.

I hear a lot of talk about the taxes. They have gone up and up and up. My husband's family has been in this area for over forty-five years. We have lived here for over twenty-four years. In that time, the taxes have done nothing but go up. Mr. Camarda spoke beautifully about building, building in Carmel, he was going to put in a hotel, Bed, Bath and Beyond was going to go there, restaurants were going to go there. I hear the property passed. What has Mr. Camarda done? It's easy to talk, but when it comes to it, we have nothing local to base what he says will be good for us. We hear it will be good, but we haven't seen it yet. The taxes, when they proposed building ShopRite, when they proposed building A&P, when Home Depot came, everybody said it will help our tax base. I speak to people in

Southeast, they say they have the largest

increases in taxes since Home Depot has opened. We wonder why. More business brings more people. We need larger classrooms, we need larger schools. They are building on some of the schools now. My daughter had been redistricted in her school due to overcrowding and yet we keep letting everything in. Homes were built where there were none. Condos have been built where there was none. That tax money has been coming in for more than ten years. I don't foresee this will help. Jobs: Go to any store in the area, they are looking for help. The kids don't show, they don't want to work, whatever the reason, people don't want these jobs. You can't afford to live here with these jobs. I don't see anything positive by putting this in people's backyards. I'm afraid for my family, I'm afraid for the quality of life that I've come to know up here. Thank you.

MR. MONTESANO:

Thank you for your comments. I'd like

to let the audience know that Maria DiSalvo,

our planning board member, will be keeping track of time, when it approaches the five minute mark, it will help the speaker, fifteen seconds prior to that I asked her to hold up her yellow pad so that there is a visual that let's you know it's time to wrap up. We will let you know when that five-minutes approaches.

MR. PIERRO:

Oreon Sandler.

MR. SANDLER:

I'm Oreon Sandler, P.E., professional engineer, executive director of the Croton Watershed Clean Water Coalition. This Patterson Crossing applications is unworkable. There is no committment to fund the necessary offsite highway improvements to support the project. Developments on site transportation infrastructure is significantly undersized for the proposed 434,050 square feet retail space and nearby residents will suffer negative consequences

and congestion which will eventually lead to
local town and state D.O.T. action to fund

and repairs these narrow roads.
Consequently, the applicant's proposal will
have a significant adverse impact on the area
of traffic, operating conditions and the
application should be denied. In lieu of our
outright denial, a Supplemental Environmental
Impact Statement should be required. Because
the traffic study for Patterson Crossing
underestimated the volume of traffic that
will be added to the surrounding roadway, it
is recommended that the entire traffic
analysis be revised and resubmitted as part
of an SEIS as well as other information that
might have been misrepresented in the DEIS.
The revised traffic pattern should have at
minumum include a volume analysis to reflect
15 percent pass by credit during the weekday
peak hours and 10 percent pass by credit on
Saturday peak hours. Include a revised
analysis to determine whether the internal
intersection will have sufficient capacity to
accommodate the additional incoming traffic

and holiday season traffic including left turns on the electronics and sporting goods

stores approaches to the main access road, to ensure that the site's main access road will not fail and prevent motorists from using this to enter and exit the facility. Moreover, it should analyze the signalized intersection of Tonners Road and Route 52 since 19 percent of the site traffic is projected to pass through this important intersection. The analysis should contain capacity analysis of the I-84 ramps to and from 311 since half of the traffic generated by the project is projected to I-84. I have all this in writing so I'll just hand it to you.

In conclusion, the SEIS should either propose the second driveway to access the project site or dramatically reduce the size of the project to a level which could sustain a single driveway which is consistent with current engineering and planning standards and philosophies. The supplemental EIS

should recommend a commitment of the applicant to fund the completion of the necessary mitigating measures.

Alternatively, the resolution of approval for the project should require that certificates of occupancy for the development will be conditioned upon the conditions of improvement by others. The study and this data were compiled by John Canning of Adler Consulting, White Plains, New York.

MR. PIERRO:

Joan Castiner.

MS. CASTINER:

My name is Joan Castiner and my husband and I reside at 50 Walden Road in the Lake Carmel Park District, within 500 feet from the proposed Patterson Crossing Retail Center. I share all my fellow opponents' concerns, such as increased noise, air and water pollution, congestion and traffic, overloading the Town of Kent's emergency services, increased crime and the destruction of our community as we now know it. Rest assured written comments concerning these

issues will be forthcoming.

The applicant states in his DEIS the construction will be ongoing twenty-four to

thirty-six months, six days a week. However, blasting will only be done five days a week by experts while homes and wells within 500 feet will be monitored. We lived in New York City for thirty-three years and like now we were once within 500 feet of a construction site and enduring daily blasting. One day my phone rang and I luckily left my living room to answer it when a heavy mortored ceiling came crashing down missing me by inches. I guess the experts didn't calculate that happening. I have been made aware that any aspect of breaking ground, be it blasting, jackhammer, backhoe, etcetera, puts all structures in close proximity at risk. One should not only be concerned with the walls of homes, but windows, walls, outside wall plates not to mention articles inside homes such as pictures, paintings, collectibles that are breakable, and displays on shelves

and so forth. Please note these risks remain from the beginning of construction until its completion.

As for water usage, two months after we

moved into our current home which was thirteen years ago, we ran out of water which I later found out is not an uncommon occurrence in our neighborhood. My well had to be drilled down 650 feet. Which once again is not an uncommon occurrence according to neighbors who also had to drill down over 600 feet. My question is, if there is damage to my possessions or if the integrity of the structure of my home or my well is compromised, who will be responsible for restitution? Will it be the applicant who has been known to obtain approval only to flip properties? Are contractors and/or experts responsible for overseeing each phase of construction? The big box stores who are being lured into this location. The local county and state elected officials charged with the protection of the health and safety of all residents? Or are the Town of

Patterson officials who seem so eager to see this project go ahead? If the builder and contractors have insurance, will residents that have claims end up with an insurance

carrier ward? How do residents actually prove cause and effect with certainty and not be subjected to unreasonable and lengthy scrutiny?

Lastly, the applicant states in his DEIS that the emergency exit will let out onto Echo Road, end of discussion, no mention of the egress. What are the plans for Echo Road? Will it have to be widened, thereby taking portions of residents' front yards to accommodate emergency vehicles? In all my years of living here, I've never seen the school buses that routinely pick up our children access streets above Montrose Drive. Could this be because it's hard to negotiate some of the turns on our roads, many of which are narrow and have deep ditches and make it difficult to pass oncoming vehicles? In addition, we know that Echo Road is hard to

travel in inclement weather such as snow and ice storms. I ask you to consider what would happen if there were an emergency requiring mass evacuation? Not far-fetched given the times we live in. Would we residents be

trapped up on that hill resulting from deluge of emergency vehicles?

In summation, my biggest concern and question is where is the accountability that is so lacking in this DEIS? It appears that the profit motive far exceeds all the other considerations.

MR. PIERRO:

Johanna Groepl.

MS. GROEPL:

My name is Johanna Groepl. I live at 58 Concord Road which is also the Town of Patterson. In the applicant's DEIS it reads some blasting would likely be required. What does the applicant mean by some? This is ambiguous language and does not state clearly how much blasting will be done. The question to answer is how much property is there that meets a greater than four feet cut and

therefore would be blasted? The applicant's DEIS refers to the blasting regulation of the New York State Code. The New York State Code talks about blasting rules and regulations and not about how people, animals and homes

need to be treated. In the blasting mitigation plan of the DEIS, the applicant states twice prior to blasting timely notice shall be made to offsite residences within 500 feet of the blasting area. According to the wording in the applicant's DEIS, people living within the 500 feet range can end up with only one notification. This is insufficient. Anybody beyond the 500 feet and not marked for individual notification will have to move forewarning plaques or other means. This is unsafe. Question: Is this Draft Environmental Impact Statement suggesting that blast impacts will stop exactly 500 feet? Am I expected to ignore my neighbors who border the 500 feet and let them suffer from any blasting impacts that won't stop at 500 feet? Due to my location,

I'm earmarked to be notified. How will my neighbors next to me, but beyond the 500 feet marked field when they are suddenly terrorized by an air horn. I feel in order to maintain my good neighbor relations, I have to have some means to notify my

neighbors of blasting I'm made aware of. This should not be my job, this is the job of the applicant and the town that wants the development. The 500 feet cut off is unrealistic and not neighborly at all. Blasting will be scheduled between 8 a.m. and 5 p.m. Monday through Friday. What happens when my children may have an unexpected school schedule or one of my children comes down with a cold or flu without prior notification? What are my elderly neighbors supposed to do who are scheduled to be picked up? What about cats and dogs that get spooked out of their minds running across the street causing accidents of all sorts? What if one of our dogs or cats get killed due to blasting? The state code talks about no blasting until all persons are removed. Will

people be removed by force? Will they be picked up by the local police station? What happens to our animals? Where do residents who will be impacted by the blasting noise move to? If we can't prepare meals for ourselves and families due to blasting

schedule, who will pay for eating out? What if someone's posttraumatic symptoms gets triggered by the blasting, who will pay for the cost of mental healthcare? Will there be a fight between ourselves and the insurance companies?

The applicant's Draft Environmental Impact Statement states blasting does not result in damage to existing foundations and wells if the work is completed according to current industry standards. However, homeowners within 500 feet of the blasting site can request a preblasting survey. I would think one initial preblast survey is not sufficient and the applicant needs to provide and allow for additional preblast service before each blast that is done in

proximity to those homes. In case of damage complaints, current industry standards will be used to determine if the damage was done by the contracting blasting company. What are these current industry standards? Who or what determines which year or years will be accepted for current industry standards?

What about structures that have been built before the time of current industry standards? The Draft Environmental Impact Statement states existing wells will also be monitored. Who determines which wells and what are the criteria for wells to be monitored? All wells need to be monitored to determine the safety of our water supply. What is the expertise of the building inspector, town code enforcement officer or blasting contractor who are charged with the responsibility to interview the person involved in blast damage complaints? What are the names, addresses and phone numbers where I can reaffirm or complain to if the protocol is not followed or damage is done? It is important to know the record of the

blasting contractor, as any monetary reparations for damage will be settled between the contractor and property owner. Just remember, the contractor has left town by that point.

MR. PIERRO:

Marian Rose.

MS. ROSE:

Good evening. My name is Marian Rose. I live at 9 Old Corner Road in Bedford, New York. I'm a resident of the Croton Watershed. I'm president of the Croton Watershed Clean Water Coalition.

Historically our purpose is to preserve the quality of our drinking water here on the Croton Watershed. Further development will pollute our streams, water and reservoirs which we depend on here locally and which also supplies New York City residences as much as 30 percent of their drinking water in times of drought. This common concern is shared by individual members and by over fifty member groups here in Putnam County,

Westchester and New York City. We believe that this proposed development will have devastating impacts on the quality of life of residents throughout this area.

CWC has confronted dozens of developments in the Croton Watershed. We have never encountered one as inappropriate or as potentially damaging as this one.

Because of these concerns, CWC has engaged several expert consultants. Our opposition to this development is based on sound knowledge and sound reasoning. We shall be submitting these expert comments to the lead agency in conjunction with our written comments.

In our opinion, the impacts of this proposed development will be so severe that we urge the planning board, the lead agency, to simply deny a permit for the development as it stands and to mount an SEIS for a drastically reduced proposal.

Tonight several members will be speaking about the unworkable traffic plan, the deficient proposal for sewage treatment,

the fully mitigated noise impacts, the inadequate storm water plan and furthermore our legal problems will be discussed by our attorney, Jim Bacon.

We are often told that the developer has rights. We agree, of course, the developer has rights. But mere ownership of a piece of property does not confirm the

right to harm one's neighbors, yet this is precisely what this development will do. This development can cause these local country roads to become dangerously congested. This will happen unless the developer pays in a timely fashion and in full for the needed improvements at the various traffic intersections. Simply because he owns the property, the developer has no right to cause road congestion that will most likely only be mitigated at some later date, when the developer is gone, leaving the cost and the tax burden to the local residents.

The developer is committing a

manifestly inadequate storm water pollution prevention plan that uses inaccurate input data and fudges the final results so that no conclusion can be drawn regarding an increase or decrease in phospherous pollution to Lake Carmel or the Middle Branch or East Branch Reservoir. Using the accurate input data, phospherous levels will increase. Under the new Phase II Storm Water Regulations, the

Towns of Patterson and Kent will then be obliged in storm water devices to reduce the phospherous. Simply because he owns the property the developer has no right to cause this extra cost to the town which translates into an extra tax burden to the residents. The proposal calls for the destruction of over sixty acres of a steeply slope, thickly forested hill, an integral part of the scenic Hudson Highlands (inaudible). This will necessitate the drilling and blasting of 447,500 cubic yards of soil, 119,000 cubic yards of rock which together will cover a football field to a depth of 106 feet. Simply because he owns the property the

developer has no right to ruthlessly destroy acres of superb scenery and forested land that protects the neighboring lake community. We urge the lead -- (interrupted)

MS. DiSALVO:

Thank you. Your time is up.

MR. PIERRO:

Harry Hitner.

MR. HITNER:

Good evening. Harry Hitner, 58 Concord Road in the Town of Patterson. I'd like to touch on two items from the DEIS. Conspicuous by its absence except for two very passing references is the status of Echo Road and the emergency access road connected to it. The only public access to this development is a single, steep-sided, winding two-lane roadway approximately thirty feet wide connecting to 311. This road will also be shared by delivery trucks and other service vehicles. Given the sheer size of this development, it seems to me this access road is inadequate at best and a death trap

bottleneck at worst. I can't think of a single development a quarter of the size of Patterson Crossing that doesn't have a minimum of two separate entrances and exits. The parking provided for an expected 1,900 vehicles, this is a disaster waiting to happen. The access road allows for only two lanes of traffic, one in either direction, for more than 1,200 feet, 750 feet of which has foot high walls on either side. Even the

smaller fender bender let alone serious accident will cause a major backup into the facility out onto 311. For the people stuck at 5 Patterson Crossing there is no way to get in or out, and emergency responders will more than likely not be able to get in or out. Even using the emergency access on Echo Road, any bottlenecking of the mall's access road (inaudible) to prevent lifesaving response. As for the emergency access road, the development calls for a twelve-foot wide graveled road gated and locked on both ends to prevent unauthorized access to run uphill from the property and connect to Echo Road.

At its widest point Echo Road is approximately twenty feet wide and at its narrowest less than ten feet. In addition, there are usually cars and trucks parked up and down the hill further restricting the use of the road. In a serious emergency like a fire that might require evacuating the mall and injured people, given the likely constrictions of the exits onto 311, and the fact that Echo can only handle one way

emergency exit vehicle traffic at best, we are again likely to see a disaster. People can't get out and first responders can't get in.

The applicant should show and the board needs to confirm in a worst case scenario that the emergency (inaudible) in terms much added emergency support or risk of lawsuits to the town in the event of preventable injuries or fatalities.

The second item I'd like to touch on is the sales tax windfall outlined in the DEIS. We all know not one dime of sales tax revenue

goes to Patterson or Kent. 4 percent goes to the State of New York, a fraction goes to transportation, remainder to the county. Since our schools are funded by our property taxes, only the property taxes paid by the developer will do anything to alleviate our school tax bill. The property taxes of the Patterson Crossing will amount to less than 1 percent of the current annual school budget. Also, as the housing market pools and interest rates rise, especially adjustable

rate mortgages and credit card holders, consumer spending spirals downward. Right now nationwide the Consumer Confidence Index is minus 15, worse since Labor Day 2002 which is far worse than the positive 29 in 1998. Here in New York specifically consumer confidence is 8 points lower than the national average. All of this translates into reduced consumer spending and much lower sales tax revenue.

We hear a lot about the so-called Putnam paradox, and it's true. People do tend to shop outside the county and just as

people tend to shop where they work. However, the real paradox is this: If Putnam expects people to shop here why does the county make it so much more expensive to do so? Just last week Mr. Bondi proposed increasing Putnam's sales taxes again. Mr. Camarda stated you can't buy a decent suit or big screen TV in Putnam County. Well, an average big screen TV at Costco or Best Buy will set you back around $2,000. In Putnam you pay $157 and change in taxes, in

Connecticut only $120. That's a savings of almost $38, and if you shop on the internet that same $2,000 TV set will only cost you $1,900 and free shipping and no sales taxes. Thank you.

MR. PIERRO:

Fay Muir.

MS. MUIR:

Good evening. My name is Fay Muir. I'm a member on the board of Croton Watershed Clean Water Coalition. This project proposes to destroy almost 100 of pristine forest, two

drinking water reservoirs and replace it with a shopping mall. I've been asking everyone I can the question, which would you prefer, clean water or another shopping center? Of course, clean water was the answer every time. The hundred acres of forest to be destroyed is just on the proposal, when, in fact, what will happen is much worse. The sedimentation of storm water run off will cause more acres to be destroyed. In addition there is also the lights. Pollution from the completed project that will

contribute more forest destruction in the years to come. The economic and other benefits of a healthy ecosystem is well documented. Man-made structure for mitigation cannot come close to the multibarrier protection for air and water that a healthy forest ensures us. Permits and mitigation are not the answer. More than 2,000 excedences of New York permits for storm water was recorded within eighteen months ranking New York third in the country for the most excedences. This was for large

facilities that were required to give reports. There are many more excedences that go unrecorded. Permits do not guarantee they will be adhered to. Many residents depends on wells, therefore, there should be even more concern about clean sheds, folks in the city not only is there consideration of polluted wells, but polluted air from construction vehicles and increased traffic. I live in the Bronx. Within my lifetime the Bronx has gone from farmland to being rated one of the highest in the nation for asthma.

In my area, asthma rates have risen almost 20 percent in the last two years because of one single construction. I would think it would be worse here. In addition, in my small circle, there have been three people that have suffered serious health problems during this time of construction which is exacerbated by air pollution. There's a serious economic impact and a disadvantage when the drinking water is polluted. If the water is polluted the city's answer is to

build expensive engineering facilities and increase water costs. I know our water rates went up 9.4 percent this year which translates to 24.6 percent when sewer rates are factored in. Here the rates went up even higher.

The Economic Blackburn Study concluded that to the poor there are eight times more the increased water rate than do the wealthy. Your best interests and mine are not served by destroying forests that do a terrific job of keeping the water purified. Shopping is a very poor excuse indeed.

Saint Francis of Assisi established his Order 800 years ago and has been beloved ever since by people all over the world of every belief. He said about water: "She gives boundless service and she is lonely, precious and pure. We are extremely blessed to have a clean and bountiful supply and she will remain so only if we guard her forest, wetlands, streams and rivers from needless destruction." I ask you members of the town board, what is your preference, clean air

water and good health or more shopping?

MR. PIERRO:

David Ferguson.

MR. FURGUSON:

My name is David Ferguson and I live in Chelsea in New York City, 411 West 22nd Street. I pay for the water and I drink the water. It comes from Croton. I'm the vice-president of the Croton Watershed Clean Water Coalition. I've been there for ten years. They vetoed this many times, the people in the watershed and Croton would fight to their dying breaths in their efforts

to protect the watershed. I found that the only people that are only really fighting to protect the watershed are the people in Putnam and Westchester. My fellow New Yorkers don't understand where this water comes from and what it costs. They think it comes out of the faucet. They have no information to the contrary and all the sources of information are not dedicated to giving this information out to the public.

It's a very complex situation. You learn as you go along how involved nature is that we take for granted. We have got to learn that we can't just bulldoze over nature. Mother Nature says vengance is mine, sayeth Mother Nature in tears.

This is unbelievable what is going on in terms of this watershed. We have a map that Dr. Rose did that we call the (inaudible) map. It shows Putnam. This is just one of many. You know better than I. The incremental paving over the watershed taking the vegetation down that picks up the nutrients and pollutants, holds the soil in

place and then filters the water that comes down and recharges your aquifers and your wells, you pave that water, you bring in cars that deposit all kinds of very serious pollutants and wash off with very poor drainage, the drainage designs are just not up to par. You are losing more than you are gaining in the end in terms of the environment. What is the need for this as Fay just said? It just boggles the mind.

You can buy a television more conveniently by doing this. I don't know how long it takes to go to Danbury or Highlands, that's a beautiful one, and you can look on the television and see the beauty of the world that is being destroyed in your own backyards so you can go more quickly to purchase that television. It doesn't make sense.

Economically the people -- I just don't understand. You go through towns up here. I love this place. I live in the city and I want to know it's here. One of our groups, a member of the Clearwater said he wants -- up here, this is his cathedral, he comes up here

all the time and walks on the trails. There are New Yorkers that have a great care and want the same thing that the people here want. I don't understand why -- I'm a taxpayer and yet they don't represent us. I have seen this for ten years. It is a crime, really, so if we are going to -- the blasting, what is that going to do with the hydrogeology? Is there anything in there

that deals with that? Is there anything that deals with the septics, soils, the three or four feet in places where they are going to have to import soils to get decent leach field. What kind of soil is that? What type? There are different types of soil that have different perk rates. All of these things are critical to your well water and to our drinking water.

I think it's very shortsighted for us to think that we can just -- this is something that in this century -- we are going to have to learn to live within our limits. I don't know what it does to the economy here in terms of mom and pop stores

or you can go through the towns that used to be vital and now it's all spread out on highways, along 22 where they want to widen the road between the two reservoirs. There are things that just don't make sense. Why would you do all this building out here in the watershed? People bought property out here, they knew it was a watershed. They didn't just buy it out there on a prairie,

they knew there was this type of impact to be had. Just because it's filtered, filtration is no magic bullet. The better the water going in the better the water going out. We may have to spend more money in the city on top of the millions that we are to build that plant because the water is so degraded by this continual and incredible tsunami of development.

MR. PIERRO:

Arthur Singer. David Reeves, you are on deck.

MR. SINGER:

My name is Arthur Singer, I'm the chairman of the planning board, Town of Kent.

I notice you have white chairs and black chairs. I purposely sat in the white chair figuring they are for the good guys, but they are not very comfortable.

I brought with me tonight the DEIS and perhaps the folks are not aware what we have to review in order to get a feeling of what the project is. Our planning board members

are required to read it, but they are not professionals. We have to go out and hire professionals. Due to the way SEQRA is set up, we are using our own tax money for that. We have no way of being reimbursed. That's besides the point. We go out, the developer has been probably working on it hiring their professionals for probably a period of two plus years. We have to go out and hire professionals and the professionals are not just sitting there waiting for us to make a phone call. They are busy. Given a choice, I'm confident that both the residents of Patterson and Kent want a thorough review, taking a hard look as we are required to do. I am suggesting that the comment period be

extended for thirty days so a proper job can be done. Thank you.

MR. PIERRO:

Ivanka Roberts, you are on deck.

MR. REEVES:

Good evening. My name is David Reeves. I've been a resident of Putnam County for the last fifteen years. I have reviewed sections

of the Draft Environmental Impact Statement draft accepted by the Patterson Town Board and have a few items worth sharing. With regard to the Draft Environmental Impact Statement report, the Patterson Town Board retained Stantec Consulting Services, Inc. of Pawling to review the applicant's DEIS. Stantec Consulting submitted a memo to Patterson Town Board dated June 29th with the following comments, and I quote: "Based on review, we offer the following comments to the board for their consideration in determining whether the DEIS should be deemed complete. Should the documents be deemed complete, our office would recommend that it be conditioned upon the applicant addressing

the comments noted below as well as any other comments that may be altered by the board, town planner, DIC, prior to its circulation to the involved agencies".

The applicant's consultants have determined for this project size, the water usage would be approximately 11,000 gallons

per day. This equates to a septic field of approximately 300,000 square feet, equivalent of five football fields. The proposed field is located in the southwest corner of the site running parallel to the homes on Vernon Drive. In the same memo dated June 29th, 2006, Stantec consultants states, "We have previously raised the issue of the design flow of 10,740 gallons per day in table 4.4-3 being substantially lower than the anticipated daily usage of 35,000 gallons per day based on N.Y.S.D.E.C. standards and maximum square footage. We continue to suggest that the document be revised." Based on the N.Y.S.D.E.C. water usage of 3,500 gallons per day, the septic field would have to be enlarged to 960,000 square feet or the

equivalent of fifteen football fields.

I bring to your attention one of many issues raised by Stantec Consulting, the firm that the town board paid for, taxpayers of it -- let me back up. I bring to your attention only one of many issues raised by Stantec Consulting. The firm selected by the

town board and paid for by the taxpayers of Patterson to review this draft. I find it alarming and question the board why hire experts at taxpayers' expense and do absolutely nothing with their advice? Thank you.

MS. ROBERTS:

My name is Ivanka Roberts and I live in Carmel. I would like to beg your indulgence for a minute because Julia Leriue who is conservation biologist and scientist couldn't make it and wanted to speak tonight but couldn't make it and have asked me to read a portion of something. I want to speak, so I might not be able to -- (interrupted)

MR. MONTESANO:

You can submit her comments in writing.

MS. ROBERTS:

Okay. Well, I will still read out one portion of hers because she would overlap with me because it's about forests.

Here in Putnam, we have a very, very high ozone count, even in the best of times.

We desperately need all the forests that are left just to keep that down. If we don't, if we get rid of all of these 90.5 acres of forests, we are going to see even more respiratory problems, we are going to see even more counselors because we are going to have high ozone. We need every last tree that we have here. This particular project also, people have already talked about traffic, so I'm not going to repeat that part. It will destroy the drinking waters because of all the local hydrology, because of all the run off from the hard impervious surfaces that are going to be put in there. Also if DEP doesn't allow another sewage treatment plant it will be subsurfaced because of the hydrology of this area it will destroy the groundwater and reservoirs and

lakes.

Another point, in Carmel we have been promised Costco, Walmart, Hannaford for the last fifteen years. Partly some of them by our town board, some of them by Mr. Camarda. No one has come up with any of these coming

into our town. We are tired of these empty promises. They are lures, there are no guarantees these people will come in. If you look at it logically, they won't. If it's in a highly densely, populated area, someone like Walmart or Costco can easily have two stores just fifteen or twenty minutes apart from each other. They have enough population there to get those properties. When you have a relatively unpopulated area like this or medium density, unless the stores are at least an hour's drive apart, they will not make the profits. All that the company will have to do is pay double for extra rent and extra employees. This area is not interested, between Brewster Highlands, between Danbury, between Poughkeepsie, Route 9, Route 22, we have enough large places.

Nobody wants to come in. It's time we started thinking and thinking hard and stop giving credence to empty promises.

MR. PIERRO:

Joe Ruocco. Erica Kelly, you are on

deck.

MR. RUOCCO:

My name is Joe Ruocco. I live in Lake Carmel for eight years and have spent twenty-one years as a New York City police detective. I would like to start with crime and safety. Long Island had over sixty home invasion robberies last year, all near entrances and exit ramps and more than half near shopping complexes like this one. It's only a matter of time before people look for shortcuts to avoid traffic by your block. Who is going to pay for first responders to the location or to the traffic accident on 311? If Kent is the first responder, is the Town of Patterson willing to reimburse the Town of Kent? After all, the residents of Kent pay taxes for a police department which Patterson does not have. We will need

traffic lights and wider roads to avoid the tragic accident which occurred on Thursday, September 7th, which hurt four people and killed two. These improvements should be made by the developer. If it isn't in place

before the project is built, it will make taxpayers of this county have to foot the bill. Route 311 cannot support the amount of traffic being talked about. 1,500 cars per peak hour? The causeway over Lake Carmel, the intersection of 311 and 164, the one-lane railroad bridges on 164 as well as the intersections of I-84 and 311 must be improved before this project goes forward. Also Echo Drive being used as an emergency exit makes no sense. There's a narrow road on steep grade which has parked cars with many families living on it. It leads to Cherry Hill Road which is no better off. I cannot understand how the Putnam County Emergency Management and the Putnam County Sheriff can approve this as a safe environmental egress for many vehicles in an emergency.

Before we destroy 90 acres of land because we think that it will lower or stabilize our tax burden, we just have to look around at Long Island, Westchester,

Rockland and our neighbors in Southeast, they all have developments like this and none have lowered or stablized their taxes. All have faced increases in their taxes and all they have to show for it is traffic and pollution.

You can't base your budget plans on sales taxes. Besides, half of the items sold in Costco are food items and there are no sales tax on food. All these types of stores have a history of (inaudible) and underreport their sales in order to save money. Then they take their profits out of the community. I have two articles stating Costco expects a 4th quarter profit to be below estimates because sales have slowed and blame higher gas prices. The other is about Lowe's that states that they cut their four-year earning output because of sluggish sales due to the high energy costs and a slowing housing market.

You will always be paying taxes, whether it's high property and school taxes, raising sales taxes, any way you look at it you will be paying for. Putnam County has

the lowest unemployment rate in the State of New York. There are plenty of jobs in the area not being filled. The jobs being offered here are low paying jobs with no benefits or future. The people that work at these jobs cannot afford to live in the county and own a home. What we need here are corporate jobs that pay higher, has benefits and good future. I have heard people say that it will be good for the teens, that they can get jobs in stores. Lowe's and Cosco have age limits of over eighteen to work in their stores. Most of the young adults over eighteen in this county have to leave the area to attend college because we do not have a college campus or a community college in Putnam County. All of these jobs are dead end jobs with high turnover rate. As for local tradesmen and union people, there's no guarantee that they will get any of the

construction jobs. I find it ironic that the Town of Patterson and the town board found that a dog kennel for sick and injured dogs

was a quality of life issue for the people that live in the area and that the lights at the ball field on Fort Wall Hill Road bother the residents in that area, that they want to shorten up the games, but to build a 90-acre development in the backyards of 2,000 homes is not a problem.

In the DEIS report, they state a lot of could be's, might's and maybe's. But we cannot approve a project of this size on maybe's because once a project starts without them, it will be a taxpayer that foots the bill -- (interrupted)

MS. DISALVO:

Thank you, your time is up.

MR. PIERRO:

Thank you, Joe.

MS. KELLY:

Good evening. My name is Erica Kelly and I live at 56 Huntington Road in Lake Carmel. I'm one block away from Terry Hill

and I'm about 100 feet from Concord.

I'd like to first say that myself and my neighbors, we are not completely against

having commercial properties, businesses in our area. It's just something of this size, the magnitude that we cannot sustain. I don't feel to save a couple dollars in gas so not to have to go to Fishkill or Danbury is a good enough reason to drive out your neighbors in Lake Carmel.

My concerns are the same as everyone else's this evening. They have all been stated, water, taxes, septics, the list goes on. I feel a project of this size cannot possibly address every concern that is brought up this evening to this board, so my question is, who will be responsible if or when the properties or the families in my neighborhood are affected by this property? Will it be the Patterson Town Board? Will it be the Kent Town Board. Will it be Mr. Camarda or the stores that are going in? That's the biggest question. Who do we go to when we have no water? When we have no

I'd like to ask what plan is also in place for the additional police and fire protection as well as ambulance services that will be needed when the project is completed? Which town will absorb the costs? Patterson? Kent? Mr. Camarda? Where will that come from?

The local town boards in this area have laws regarding garages, sheds, property lines, abandoned cars, pools and such. They have laws about these things being unsightly or too close to your neighbor or too large or ugly, whatever it is. Therefore, the town makes you either correct it, move it, not build it or do it within a certain spec. I find it very humorous that something of this size is even being considered. Thank you.

MR. PIERRO:

Antoinette O'Connor and Ann Fanizzi, you are on deck.

MS. O'CONNOR:

My name is Antoinette O'Connor and I

live on Amawalk Road. I'm a resident of Lake Carmel for over thirty-five years and I'm

raising my family here as I was raised.

My biggest concern of this project is the additional volume 1,600 to 2,200 cars an hour into our community and the additional environmental pollution that this volume will generate. I'm also concerned that this influx of people from outside our community will be driving through our neighborhood streets creating a danger to our children playing in these streets. I think this influx of people will also be an invitation for crime.

The builder does not state that the total cost of the six traffic lights and a series of turn lanes along a two-mile span of 311 between 164 and Cherry Hill Road, but he does state that this area of road is in such disrepair that it would need this work anyway, but the truth is that span is new, so I don't see why we need to make these improvements. I don't think it's fair that we taxpayers have to absorb the cost that is

Basically, that's all that I have. I'm concerned about wells. Taxes, I don't believe they will go down, but I really do feel that this proposed project is going to change the character of this community forever. Thank you.

MR. PIERRO:

Jim Bacon, you are on deck.

MS. FANIZZI:

Good evening, my name is Ann Fanizzi and I chair the Putnam County Coalition to Preserve Open Space. I have some exhibits, if they could just be turned around to face the audience also. I'm also a board member of Croton Watershed Clean Water Coalition and their Putnam County representative.

Lady and gentlemen of the planning board, I wish to take this opportunity to present an issue that has not been presented. You are responsible for the health and safety of not only the people of Patterson, but also those of Kent. So you bear a heavy responsibility. It is not often that a

to reach a decision for two towns. I don't envy you. However, you are also responsible for the health and safety of these two towns, and so I wish to draw your attention to three towns in Connecticut that have a Costco. They are Brookfield, Norwalk and Waterbury. Each of these locations were visited by myself and another resident of the community, and I did so based on the following: In the scoping document, it says the following: To discuss the potential increase in rodent or scaveneger population, and then under C, the mitigation measures used to control rodents and other scavengers such as the use of containers with lids. When we go to the Draft Environmental Impact Statement though, there is no mention of rodents, scavengers or the like. What it says is simply, and it's only passing, that supplemental measures which may include additional fencing, and I'd like for to you to take a look at the fencing of a recently built Costco in Norwalk, Connecticut. It is cheap and broken and that

would be employed not to control rodents. In the Draft Environmental Impact Statement it says nuisance animals. A far cry from what the scoping document says. So then when I visited these sites, I interviewed a resident in Brookfield and he gave me some interesting information. He said Ann, go back to Costco and go around the building and you will see black boxes. On the black boxes is says poison, do not touch. And the company is called Protecta. When I went to Norwalk, I saw the same thing. When I went to Waterbury, I saw the same thing. Now, the difference between -- now, Waterbury and Norwalk are along highways, not in residential areas. Even Brookfield is not that near a residential area. So the impact of a warehouse, we are talking about warehouses here, we are not talking about a store. Anyone who has been in a warehouse knows that these kinds of pests and rodents are endemic. Anyone who reads a newspaper knows that on ships from Asia, South America and so forth, we are getting all kinds of

invasive plants, animals, vermin and so forth. This community has none of this. And when you go to the Protecta site, this is exactly a rat trap, not a trap for nuisance animals, but a rat trap. Now, here we have a community that has dogs, children, pets, even feral cats. What happens when these pests and vermin do not take the bait, do they take the bait from the dogs, the children and we know the connection between Lyme disease and fleas from rodents? We must think -- (interrupted)

MS. DISALVO:

Your time is up.

MS. FANIZZI:

I have one sentence. I want you to take into consideration that you are introducing not only a development, but everything that goes along with it. And your primary obligation is to do no harm. Thank you very much.

MR. PIERRO:

Susan Glidden, you are on deck.

MR. BACON:

Good evening, Mr. Chairman, members of the board. My name is Jim Bacon, I'm attorney for CWCWC and Putnam County Coalition to Preserve Open Space. Due to the unprecedented size of the project and wide range of impacts, we also request a thirty-day time period to submit written comments to allow our consultants adequate time to prepare and deliver those.

Our preliminary findings though are that the project is dramatically out of scale with the surrounding area and the DEIS is insufficient and failing to include sufficient information on the project's traffic, storm water, hydrogeological, rare and endangered species impact, and fails to adequately assess the project's conformance with the town codes of Patterson and Kent. Therefore, supplemental EIS is required under SEQRA.

Now, regarding comprensive plans and building codes, the comprehensive plan for this town does not envision a project anywhere near the magnitude that is proposed

at 434,050 square feet. The zoning code does identify regional retail centers starting at 75,000 square feet, but this project is 5.7 times that.

Consider traffic. The project will generate 17,600 vehicle trips on a peak weekday and up to 23,000 vehicle trips on a Saturday. I have the proof right here. I'll deliver that. That's going to be our comments also for our traffic engineer.

To put that in context, that is 3 and a half to 5.3 times the daily traffic now on Route 311, that's according to the comprehensive plan. Considering the sewage impact. This requires 8.7-acre leach field. The town code does not permit that in a residential zone. Consider the site disturbance, the cutting and blasting of enough soil and rock to fill a football field of 106 feet high. This is no small matter. This project's unprecedented size and magnitude would require at least three uses in area variances by the Patterson ZBA. That needs to be recognized. First, the zoning

code states for a regional retail center access should be only from a state or county road and the road access here is not in the Town of Patterson, it's in the Town of Kent. It's beyond the jurisdiction of the town's zoning code. A use variance is required.

Second, the access drive is 3,500 feet long, approximately 2,900 feet is in the Town of Patterson. The town code limits cul-de-sacs to 1,500 feet, limit driveway lengths to 2,000 feet. Whether you define this as a driveway or street it's going to need an area of variance.

Third, use variance is required to use that 8.7 acres of R4 zone property to treat the sewage. Commercial sewage field is not a residential use. This use is not allowable under the codes for the R4 district zone.

The lead agency cannot avoid these examinations. As we learn from the Meadows case in Southeast which the Appellate Court reversed Judge Nicoli's decision, the lead agency must not leave the heavy lifting of the review of this to other agencies such as

D.E.P. or D.E.C. or any other agency. For good or worse, you are the ones that are charged with looking at every environmental review and whether or not you need to hire whatever experts you need to hire to help you, you have to do it.

In completing that job, the board has to look at the standards that D.E.P. uses and the other towns and their codes. One of the things that you need to realize is the ZBA's charge is that this project shall be with the requirements to lessen congestion in the streets to promote health and general welfare. For the environmental impact, we have had David Clouser to discuss that. The environmental inventory needs to be looked at. Tim Miller does not have the expertise to do that.

To sum up, the SEIS is required because the project cannot meet the present goals of town code. I'll submit the traffic information.

MR. PIERRO:

Ray Mainiero, you are on deck.

MS. GLIDDEN:

Good evening. I'm a Croton Watershed resident. Susan Glidden, board member of CWCWC and also with the Putnam County Coalition to Preserve Open Space.

I'm also a lake community resident living at Beach Lake in North Salem and like Lake Carmel, we have enough high density housing traffic on small narrow roads to certainly not need increased traffic which Patterson Crossing will bring.

The proposed massive big box development will sit right on top of Lake Carmel and its residents and their drinking water supply. The forest of the proposed site now holds rainwater from running off, allowing it to seep into the ground and water supply sources, clean and filtered by this natural forest process. To slash the forest and pave it over with impervious surface of roads, parking lots and buildings will create dramatic run off of water which by gravity will be carried downhill polluted with the toxic soup of chemicals from increased

vehicular road traffic. Is that the kind of water that is desirable that is being filtered through wells of Lake Carmel residences? The sewage of this project is to be treated underground, is that also a desirable condition to well water supply? We should be considering the Croton Watershed ban on phosphates, fertilizers and pesticides, not an increase in pollution to our drinking water. With the destruction of forest, blasting of rock and digging of earth in construction, comes erosion of sediments and silt which will wash down some man-made storm water controls while other run off will inevitably go straight into Lake Carmel. If those controls like catch basins are not carefully and frequently maintained, the clogged overflows will carry sediment and debris into Lake Carmel and escalate the filling in of the once beautiful lake besides polluting its water.

Who is to pay for the necessary and expensive maintenance of storm water controls, is the developer? He should, but

it's you, the residents of the towns who will pay. We have enough new high cost associated with Phase 2 storm water regulations coming at us in 2008 without additional storm water maintenance cost of this proposed unsustainable development.

What about consideration for our wildlife habitat, where are the wildlife to go? The developer suggests that there's a large tract of land across Routed 84. They are to make their way across Route 84 alive? Not likely. The myth that new commercial development will bring tax relief to residents is a myth continually pushed by the developer and politicians wanting to push through their project. It mesmerizes residents while just the opposite occurs. Within a few years the rise in taxes for the cost of additional very expensive infrastructure needed to support big development outpaces what taxes would have been without it. Don't be fooled. Look at the tax maps of the towns overdeveloped like Yorktown.

There are reasons why the Croton Watershed has strict regulations. They are to protect our water and New York City's drinking water. The Croton Watershed is filled out. It's been developed within regulations of New York City's Memorandum of Agreement in town codes on almost all suitable land. What remains is all mainly unsuitable land for development that has vital wetlands, wetland buffers, steep slopes, rock outcroppings and poor soil. For the Croton Watershed town boards and town planning boards, to approve projects on unsuitable land such as on the steep slopes of this development is truly unconscionable. Favoring developments rather than water protection must stop before our water has become degraded and it's too late. Approvals or variances must be denied for irresponsible development.

Our most important resource is water. Our watershed is a precious uniquely high quality water system, but it's a fragile ecosystem and we must stop taxing it.

(inaudible) leaving sufficient forest and wetlands to filter, recharge and prevent flooding, to allow invasion of our wetlands and critical buffer zones, to allow trepidity in our drinking water and erosion by building on steep sleeps, to threaten sufficiency by overbuilding and reducing recharge areas, to allow this Patterson Crossing development to be built immediately on top of another community and their drinking water really extends beyond pale. Protect our water, please. Protect our residents and wildlife and stop Patterson Crossing.

MR. MAINIERO:

My name is Ray Mainiero. I'm a member of Putnam County Coalition for Open Space and I'm also a resident of Lake Carmel for forty-four years and also a high school biology teacher for thirty-eight years, retired right now. I didn't expect to spend my retirement on this crap for the last three years. I'm certainly no expert.

Others have talked about noise, traffic and the link in taxes. Since no one has

talked about wildlife, trees and plants can't speak for themselves, so I'd like to speak a little bit about them. Page 63, potential for use by rare or endangered species of the DEIS. The DEIS states that the biologist followed the route of the transit generally following the existing dirt road on the site in a zigzag pattern. This was done to observe potential endangered species such as at bog turtle and mud turtle, etcetera. Was there ever any randomized creation of a 10 by 10 meter plot with detailed observations of each plot to quantify and identify the population of existing species? The existing table is for normal habitat found in Putnam County. It does not apply specifically for this site. Were observations made during all seasons of the year? Were any migratory animals researched for these periods of time? Was this a possible corridor for migrating animals in the spring and winter months? Was any observations of this done? Table 4.7.1 wildlife lists in section 4.7.3, this table indicates there were only if five mammal

species observed on this site during the zigzag pattern. How thorough of an investigation was it if only five animal species were observed on a 90-acre plot? How can we assure it was an accurate study on the ecosystem? How many trees will be cut down? What are the approximate outage diameters? How old are they? Think of all the niche systems that will be destroyed when these trees are cut down. Think of the impact that will have on the plants and animals in this area and Putnam County. We are handing over our precious environment to greedy developers that has the audacity to substitute 5 gallon size trees to replace what we have now.

Mr. Camarda stated at a recent meeting that the displaced species would migrate to another habitat. This is simply false. Each habitat has its only existing species occupying already existing ecosystem and cannot simply be displaced by an incoming species. It doesn't happen that way. They will compete on the availability of food productivity and will die out as a result of

that. Thousands of plants and animals will be lost as a result of this.

As a biology teacher for thirty-eight years I have gone on many field trips, although I'm not a expert, I can guarantee that the average person would observe more animals species (inaudible) than by simply taking a casual stroll in the woods.

A couple of comments about the noise levels, potential impact. He states there will be potential impact that noise impact will be a result of construction activities and are intermittent short-term temporary impacts. What does the applicant mean when he says intermittent and short-term temporary impact? Exactly how long will the rock crunching and grinding go on? What decibel levels will the residents expect of this project? To add 10 decibels alone, and the hillside that gives us protection now, will add another minimum of 10 decibels. This will quadruple the sound density coming off I-84. The intensity sound decibels doubles per every 10 decibels that has increased. In

addition, of 20 decibels, it will quadruple the sound of intensity. Noise levels have been measured to be between 65 DBA and 90 DBA. However, decibel levels recorded by individuals limited to be measured normally 55 decibels and as high as 80 decibels. How will decibel levels increase when you add to this noise, blasting rock, crunch, grinding, etcetera, as those chain saws are taking down thousands of trees. Thank you.

MR. PIERRO:

Edie Keasbey. Gary Steinbach, you are on deck.

MS. KEASBEY:

Good evening. My name is Edie Keasbey and I live in Patterson and I have for more years than I wish to admit to. Once again, a group of people are being targeted by a proposal that will impact their health, safety and social well-being. These are the main issues that we are dealing with tonight. They are also the most important rights our government is challenged to provide for their constituents. Tonight our elected and

appointed public officials are here to listen to the people fight for their right to their health, safety and well-being. Recently, a group of Patterson residents protested a large kennel proposed near their affluent residential neighborhood. They cited that the noise, more traffic, odors and possible pollution from animal feces and urine would destroy their quality of life. The town board and planning board took note of their complaints. They proposed changes to the Patterson's zoning code regarding large kennels assuring greater protection to the quality of life issues to all Patterson residents. These changes have recently been adopted. Not so in Lake Carmel. The proposed Patterson Crossing, all 439,000 square feet of big box stores will effectively destroy the quality of life and value of the homes of thousands of middle class working families. In like Lake Carmel and Patterson, of which the vast majority have no vote in Patterson. This is an important socioeconomic issue and it has not

been discussed. This is an issue of environmental justice. How does the EPA define environmental justice? This is a direct quote from the EPA's environmental justice's web site. "Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, culture, education or income with respect to the development, implementation and enforcements of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic or socioeconomic groups should bare a proportionate share of the negative environmental consequences resulting from industrial, municipal or commercial operations or the execution of federal, state, local or tribal environmental programs and policies."

The environmental justice movement was started by people, primarily people of color who needed to address the inequity of Environmental Protection Services in their communities. Grounded in the struggles of

the 1960's civil rights movements, these citizens from every facet of life emerged to elucidate their environmental inequities facing millions of people. Ladies and gentlemen, environmental justice is no longer an issue of color. The less affluent regardless of color, race, creed, lifestyle are also targeted. Lake Carmel is a thriving middle and low income community that has provided a lifestyle with the amenities of a lake district community and they pay taxes for these amenities. Since the 1930s, generations have grown up and prospered in Lake Carmel. This is the kind of community that unselfishly gives back to their neighbors and town. Indeed, they are the backbone of every town. Lake Carmel is one of twelve lakeside developments in Putnam County and one of the two largest. It is now the only lake community that finds -- (interrupted)

MS. DISALVO:

Your time is up.

MR. MONTESANO:

If you want to submit your comments in writing. Your time is up.

MR. PIERRO:

Glenna Wright, you are on deck.

MR. STEINBACH:

Gary Steinbach, Carmel, New York. I haven't prepared anything, but I would just like people to picture off to the side of 84 where this site is a flat piece of land with a bunch of box stores on it that is going to look just about as ugly as Brewster Highlands looks. And I'm only three miles from Brewster Highlands. It's going to pit one store against the other. It's only duplication of shopping, it's not new shopping. Bed, Bath & Beyond or Linens & Things. It's a choice between Lowe's and Home Depot. One is going to win out over the other and someone is going to end up with an empty mall. Is it going to go to us? People have talked about the run off of water, storm water. It's all going to be polluted. I see how important water is to everyone here. You

all have water in front of you. Please don't

harm our water. Thank you.

MR. PIERRO:

George Nikitovich, you are on deck.

MS. WRIGHT:

Good evening. My name is Glenna Wright. I'm a resident of Kent Lake. I've had the great opportunity or struggle to read the Draft Environmental Impact Statement for the last three weeks. So my speaking points will specifically address things that I covered as I took one small portion of this document and that point is the visual resources. This section describes -- the aesthetic resource section of the Draft Environmental Impact Statement which begins at 4.13-5. This section misdescribes the general area as rural development emphasizing the development aspect of single family homes and individual commercial and retail establishments. In actuality, the area and its aesthetics is rural. That is lacking the development. The proposed retail center

would introduce urban sprawl in a decidedly rural setting. Quite amazingly after all the

comments received by the applicant and this town board, the Draft Environmental Impact Statement made the blatant misrepresentation that, and I quote, "there are no designated aesthetic resources or public facilities of cultural importance identified within the site (inaudible) that would be sensitive to changes in the visual environment. The Draft Environmental Impact Statement completely fails to acknowledge the existence of the Lake Carmel Park District and the Great Swamp as significant aesthetic cultural resources. The Draft Environmental Impact Statement includes maps where Lake Carmel is located in relation to the project floor does discuss the impact of the project that will have on views from various points within the park district. In light of this obvious impact on the park district and the Great Swamp and the great public outcry regarding the impact on Lake Carmel, it can only be concluded this was an intentional omission. Clearly, this

Draft Environmental Impact Statement fails to fulfill its legal requirement of addressing

all significant issues. Under General Municipal Law, Section 239NN, the Town Board of Patterson has an obligation to address these issues despite the fact that a portion of this project falls in the neighboring Town of Kent. The DEIS report cannot be permitted to avoid discussions of the park district, the stark reality that Lake Carmel has not been referenced indicates that the developer has no intention of considering preserving the park district. The Draft Environmental Impact Statement proposes building fences to adjacent properties for buffer and noise reduction. The report suggests that the existing vegetation be removed citing that the vegetation does not offer sufficient buffer from view or noise. This proposal is a blatant disregard for preservation of the Lake Park District. The site contains dense vegetation that can help to reduce the impact of retail space for both noise, not to

mention the preservation of natural habitat which is critical to the wildlife found within the park. In terms of landscaping,

signage and lighting, again the Lake Carmel Park District is not referenced by the Draft Environmental Impact Statement. There is no discussion of landscaping, signage and lighting and how it will impact the lake district. The project does not offer any exclusions to maintain the integrity of the park during nighttime conditions. In conclusion, the obvious omission of the Lake Carmel Park District and Great Swamp within the report indicates that the developer's intention to build a real estate space in cooky-cutter fashion that is not expedient and inexpensive. The Lake Carmel Park District is a delicate ecosystem which requires careful considerations of land use. The megaproject described in the Draft Environmental Impact Statement is unsuitable for this land site.

MR. PIERRO:

Henry Zemsky, you're on deck.

MR. NIKITOVICH:

My name is George Nikitovich. I live in Westchester County in Cross River. I've

been coming to Putnam County since 1968 when I lived in New York City. I moved here about nine years ago in Westchester, but I love Putnam County. I love it because of the good water here and the rivers here and the reservoirs and the streams for trout fishing, I'm a trout fisherman.

Anyway, Putnam is a very small county. Its motto is "Come to Where the Country Begins." The question I ask all of you is for how long? I'm a member of the Putnam County Organization to Preserve -- Coalition to Preserve Open Space which I love. I'm also a member of the CWCWC and also Trout Unlimited, so I do like the country setting. Anyway, how long is that motto going to be worthwhile? Putnam has been built up so much that there is very little open space left, unless it's New York City watershed property. Why, I ask, can't Carmel find suitable flat

land to build some ball fields? I mean all of you have read the papers. The simple reason is because this side of Putnam has been overbuilt. Way overbuilt. There are

only three exits off of 84 for Putnam. First is for Brewster Highlands, ugly, it looks like a prison. At night it looks like a prison. But that's not enough. Now, let's put in on the next exit Patterson Crossing with more big boxes. The false reason for it is, false is the operative word, it will save on taxes. It will save on taxes. Bull Twinkees. Putnam County's taxes have been rising for the last ten to fifteen years. People are moving out. I know lots of people in Putnam County and they are telling me the taxes are going higher and higher and higher every year. The old song it will reduce your taxes doesn't wash anymore. Why are there so many no votes against the town budget recently? What does that imply? People have had enough with taxes. Big developments do not lower taxes. They raise taxes. In fact, farmers pay much lower taxes than

suburbanites do. They require much more town resources. Big box stores require additional services that increase taxes. More police, more fire patrols, more garbage hauling and

so on and so forth. The jobs they provide are low paying and rarely lead to a career. Someone else mentioned that before. Finally, big box stores ruin the small shops that make up the mall town fabric. Good-bye local hardware stores, good-bye local dress shops. All you have to do is go to northern New York to see the small towns up there and see the positive, low population, the decrepit, abandoned houses, people on welfare and closed stores after a Walmart moved in. That destroys the fabric of small town America. As for Patterson Crossing, endangered species by the way were found along the Kent/Carmel border recently.

MS. DiSALVO:

Thank you. Your time is up.

MR. NIKITOVICH:

The new motto for Putnam County should

be come to Putnam County where the rats and run off begin.

MR. PIERRO:

Chris Wilde, you are up next.

MR. ZEMSKY:

Good evening. I don't have any prepared remarks, so it will be a little disjointed here. I understand if you live near the site -- (interrupted)

MR. MONTESANO:

Your name?

MR. ZEMSKY:

Henry Zemsky, I live in Patterson. I understand, I would be mad if I lived a block or two from that site. I understand the blasting issues, reading the environmental impact statement, I'm not sure who will pay for the road improvements. Is it going to be the state or developer? The environmental impact statement is absolutely not perfect, it needs some work. I agree with that. Part of the road water run off everyone is so concerned that this developer is going to fix something that the Town of Carmel or Town of

Kent has not fixed, they are going to improve that. I care about what the residents of Kent and Carmel and Patterson say about this. I don't care about anything that anyone said that doesn't live in this area. Rat traps.

Every commercial establishment has rat traps. I've been fishing there for twenty-nine years. Guess what? There's rats in the water. That's where they live. I guess they are called vermin in Katonah because rats can't afford to live there. I care about what Edie says, she is a resident of the Town of Patterson and she has been living there in the area. 90 acres of trees in the commercial zone, you chop them down. It's only Disney World where the trees are indoors. I don't think the developer said he's going to put a septic system in. Septic systems are the best way to filtrate water. That is a fact. I don't think anybody has proven anything different about that, so I don't think the septic issue is going to be a problem. I live in the Brewster tax district

and my taxes went from 1,650 to 1,550. Is the Highlands the reason for that? I really don't know. I can't tell you. I know my taxes went down. If you live in Lake Carmel, you went up 25 percent. I don't think I'm lucky. The town needs the assessed

evaluations. Our largest single land owner in the town is a religion. We get more tax dollars than we did when it was Mendle Farm. If that was real property, we would be able to get a lot more taxes. I'm not sure about the sales tax issue, but I know in order for us to stop double digit increases in the county sales tax and to stop the bleeding, it will help. It's not a panacea. It's not going to solve any of our problems, but it's something that is going to help. Since I don't have prepared remarks I'm finished. Thank you.

MR. PIERRO:

Charles Sisto, you are on deck.

MR. WILDE:

Chris Wilde, I'm here on behalf of Riverkeeper. We are going to be submitting

more extensive written comments on the DEIS in the near future, but I'd like to address some particular issues on the project tonight. Given the level of interest and volume of complexity of materials here, I think a thirty-day written comment period is

appropriate.

We have a wide variety of concerns of astounding scale covering nearly every available area of the project site spread over two towns and the watershed districts of two areas. A project this size will have almost mind boggling levels and types of potential impact. First, in order to prepare the site for this extent of buildings, parking and roadways, the applicant intends to undertake blasting of 119,000 cubic yards of rock and cut well over a half million cubic yards of soil. Think about that. We have rarely, if ever, seen a clearer example of a site being fitted to a project rather than a project being fitted to a site. With the possible exception of the Highlands, as

people have noted. The effect of topography and drainage of this activity is unclear in the DEIS. It merely states that drainage will be generally maintained without any explanation or elaboration at all. Second, once completed, the 90 plus acre site will have 68 acres of habitat lost, fully 76

percent of the site. Of the 68 acres, the applicant propose to ultimately revegetate thirty-six acres, but this will be in the form of lawns, landscaping and storm water controls, not existing forest and fields. The other thirty-two acres will be converted to impervious roads, rooftops and parking. (Inaudible) says contains soils that have severely limitations for roads and parking lots. Incredibly, the applicant actually categorizes this mitigation that 24 percent of the site will be left undisturbed. Among the other infrastructure proposed is the series of individual septic tanks that will lead to 8.7 acre disposal field which makes it unprecedented in size for a project this large. Due to the shallow depth of the

groundwater of this portion of the site, the applicant proposes to cover the entire field with two feet of gravel and soil. Still, it appears that the depth of groundwater, even with this cover, may be less than what the applicant itself cites is necessary to treat effluent leading to potential impacts of

groundwater and (inaudible). Presumably the applicant plans such a risky treatment regime because of the cost on construction of a treatment plant. In this situation, tertiary treatment of a subsurface disposal would be preferable, although we note the spotted (inaudible). At an absolute minimum the applicant should have a 100 percent reserve field for the septic as is required. This may, of course, necessitate the applicant to eliminate a whole collection of retail buildings that there is almost no remaining undisturbed or unused area on this site. Putnam (inaudible) water generated by the impervious, the applicant proposes a series of treatment basins throughout the site.

Three larger basins located in the northwest corner would displace nearly one-third of an intermittent stream and surrounding buffer area. As the stream bed is currently eroding, of course it doesn't appear thought was given to mitigate the site's impact by doing channel restoration and (inaudible). One table note on storm water. Contaminants

of vehicles of the site such as hydrocarbon and toxic metals are not properly absorbed. The applicant must fully flush out the multitude of material emanating from thousands of vehicles running off acres of impervious pavement. Surely proposing impervious pavers at the outermost rural parking doesn't cut it. It's apparent after reviewing the Draft Environmental Impact Statement that this project is too large, will cover too much of the overall acreage proposed. You heard from countless residents tonight. Your job is to protect the quality of life and natural resources of this town. Please do it.

MR. PIERRO:

Paul Spiegel, you are on deck.

MR. SISTO:

Charles Sisto, I live at 10 Greenridge Court in Lake Carmel, New York. I would like to understand something before I start. People have asked for an extension of written comments for thirty days. Is the board going to consider that or is it still the 25th that

we have to have our written comments in?

MR. MONTESANO:

We are considering it right now. We will have to make a decision by tomorrow night.

MR. SISTO:

You will make a decision and it will be on the internet?

MR. MONTESANO

Currently it's the 25th.

MR. SISTO:

Thank you. With the Draft Environmental Impact Statement and we are looking at 4.9.3, existing on site noise levels. In this, it states that there was a

Greenwood Court and it didn't exist and that said it's Greenridge Road. It is Greenridge Court, it is not Greenridge Road. They also stated that they took readings in that specific area at the end of Greenridge Road, but it is Greenridge Court, and that is referred to on existing site noise which is under 4.9-4. They had taken readings in different areas with a decibel reader and

came up with 5.5 to 5.2 and they were taken at times about 5:00 at fifteen-minute intervals. I'm in a present state -- anymore presently taking readings right now with decibel reader that has been verified and meets the criteria of what the Patterson town code and Kent town code is and taking at different hours. I'm going to submit them. The read that I get which is a good half a mile from 84 are much higher than what they are saying. I have readings of anywhere from 56.8 to 71.2. I have documented them at different times and I would submit them at a later date. As the last gentleman said here, the west side there's going to be removal

trees. That's where the entrance is. My concern is after they are removed the noise will circulate, get louder because of 84. When 84 was built over four years ago, there wasn't anything that could be done at that time. It was eminent domain, it was built and the noise persistently got louder and louder and louder. Because of the way -- how would you say, Lake Carmel is located, it's

like an ampitheater. It's surrounded by hills so the noise does travel. It was, how would you say, emphasized with Ray Mainiero when he said as it goes along it gets a little louder and it does. I sit out on my deck. I can hear, depending on which way the wind is blowing the noise and sound from 84. I hope the paving will reduce that. On another note, on the wells, I don't want to belabor this thing, people have talked about it, 4.4-11, it states that he would be -- he wants to have a reasonable distance to be responsible for the wells at 1,500 feet from their production well. I feel with the

blasting it could affect wells even further than 1,500 feet. He is stating that that's a reasonable distance. Who is he and where do we come up with the reasonable distance from the operating wells, especially when the blasting is taking place, and as this last gentleman said, because of the septic and the way that the bottom of the septic is going to be finished with rock and sand --
(interrupted)

MS. DISALVO:

Thank you. You may submit your written comments. Time is up?

MR. SPIEGEL:

Paul Speigel. I live in Lake Carmel. I've lived there for the past eight years. I'm a native of Putnam County. I love Putnam County. When my family first moved up here in 1960, they moved up here to get away from the crime in Manhattan because a kid was murdered delivering Christmas trees that year. I grew up here and learned to appreciate the solitude. I grew up in Putnam Valley. Front Street is like a city compared

to where I grew up. I live now in Lake Carmel. I think anyone who grew up here thinking they were going to get shopping convenience has a hole in their head.. It's just not here. The Putnam campaign is another issue. The DEIS, I've gone through a lot of the DEIS, far from all of it. One of things the DEIS completely fails to address is that crime, while our property taxes are higher on average, our crime rates is one of

the lowest in the state. Crime is low because there are so few places for criminal element to congregate in our bedroom community. Any place where the soda machine or public telephone is gives a reason to loiter. Bringing in criminal element so close to a community and hard working family brings danger into our homes. Many people I know now leave their homes unlocked and even leave their keys in their car's ignition because they think it is safe. This will be a memory if big development and project goes through. No crime studies have been included

in the Draft Environmental Impact Statement. How does development such as this affect crime rates that are built so close to residential communities and how do they affect our insurance rates? What other cost will be added to protect our homes from outsiders that mean us harm? I have a ton of studies over there. I'm going to refer to some of them. According to some studies, crime in commercial developments are not adequately planned for in terms of police

personnel because the types of crimes being committed were not planned for. In Pineville, South Carolina, one of a growing number of towns have added large retail stores in recent years only to find stores do not generate the tax revenue to cover the impact on public services, particularly police cars. Over the past decade, Pineville have attracted over 6 million square feet of new retail, including a major shopping mall, big box stores, gas stations, restaurants. Many communities such as Patterson despite their large commercial tax basin in order to

keep their residential tax low, despite their good intentions, development like the ones in Pineville fail to financial promises and generate unforeseen problems by their planners. In Pineville, the town takes in $2.3 million in property taxes, but spends almost all of this, $2.2 million on its police force. The police force spends most of their times dealing with crimes like shoplifting, bad checks, credit card fraud, and other crimes originating from the

shopping centers. Commercial property accounts for 96 percent of the police calls. Desperate to control the rising cost, Pineville tried to put the brakes on it. There is a lot of quotes I have here from the DEIS. One, Putnam County needs more retail shopping opportunities to generate sales taxes revenues to fund our mandated services without raising taxes and services and costs without raising taxes. Study after study has proven that developments like Patterson Crossing is what creates increased cost,

often more than the sales taxes it generates. Again, the New York State Comptroller has warned counties and towns on such a volatile means of revenue as sales tax. Yet out of 57 counties in New York, in 2004 Putnam County ranked third in respect to its reliance on sales tax as a source of revenue to balance its budget. Putnam shows 33.2 percent compared to 25 or greater reliance. Putnam County's reliance on this very volatile revenue is dangerous and is misleading. The Draft Environmental Impact Statement fails to

quantify any increased cost the project will cost, either directly or indirectly. It vaguely states the project is not expected to generate significant costs to either town. Significant to a guy who rolls property over for a cool 30 million versus a guy like me who has a mortgage on a thousand square foot house are vastly different. The Draft Environmental Impact Statement states also that the project expects to -- (interrupted)

MS. DiSALVO:

Thank you. Your time is up.

MR. D'AMBROSIO:

Joe D'Ambrosio. I'm a member of the Town of Kent Board, but I'm not here speaking for the town board. Anybody who knows the town board knows that I'm the last guy on the planet to talk for our town board, so I'm here as a resident of Lake Carmel. I can talk though as an ex-planning board member. I did serve on the Kent Planning Board. I know what you are feeling now and going through. In my tenure we had a vote to do with steep slopes. We had a tough vote years

ago about steep slopes. I had everybody calling me from old college friends to everybody. I know from sitting up there you are seeing and hearing and taking in what is before you and you arrive at a decision, you feel it, it's in your gut, you know what the right thing to do is. You arrive at that as being a planning board. I had to take a tough vote about fifteen years ago and we did it. I didn't like it, but I know it was the right thing to do. You are forming that now.

You see these people and hear the concerns. The way this whole thing is going has been wrong. We should have sat down town board to town board, planning board to planning board, neighbor to neighbor to work this out, but we just couldn't do it. That's history now. I think it's up to you, but I respect you. I have faith in you. I feel you will do the right thing. You know in your gut this project is wrong, it is wrong, it should be voted down. I leave that in your hands and remember, there's more than just a project here. We have two towns about five miles

apart. We have neighbor against neighbor. Some brothers against brothers over this. It's the wrong thing. It should go away. We should stand together as neighbors. I know you will do the right thing. Just do the right thing.

MR. CLOUSER:

David Clouser. I'm a professional engineer. We have been engaged to represent the CWC to take a look at this project. I also know what you are going through. Our

firm represents five different villages and towns and planning boards reviewing projects, so you have a tough job. We looked through the Draft Environmental Impact Statement and a lot of the comments that were made we want to echo, especially Dr. Rosen and attorney Bacon's, also Chris's. We looked at water quality impacts, particularly storm water impacts, erosion and sediment control. We will give you the written report prior to the due date and provides all of the technical information for your consultants to look at. It shows the discrepancies and I'll highlight

here the discrepancies that are in the DEIS material. So to sum up our findings, we found that some of these discrepancies were very significant. That when they are corrected, there's going to absolutely be a change in the site design. Just again on the matter of protecting water quality. Generally speaking, it's apparent that no amount of good engineerings can overcome the development constraints on this site. It's

just too much, too intense for the site that's very sensitive. We looked at two aspects, in particular one was a wastewater treatment. We found that we disagreed with the flow rate that is being proposed in the Draft Environmental Impact Statement. I think that was mentioned earlier. We find this is about three times what is being portrayed as the flow from the retail center. We also find that the SDS is located on land where there is very high groundwater table to the point that the Draft Environmental Impact Statement proposes to bring in fill to keep the leachate from leaking out of the ground.

There is a couple feet of fill in some spots. Our hydrogeologist questioned the kind of treatment that the wastewater would get in the midwinter weather. The second item that we looked at was the pollutant removal from the storm water facilities that are being proposed. We found that there were wrong moderating factors used in the report. This is the site that is a phospherous restricted site that the board was aware of. It was

identified as one of the primary problems in the watershed by the E.P.A., D.E.C. and D.E.P. and therefore instead of just maintaining the levels, especially the phospherous because that's the primary concern for the lake and watershed, that has to be reduced. The Draft Environmental Impact Statement maintains that there is some increase that which is being proposed here. Getting back to the pollutant removal factor, we find that the pollutant loading calculation that was used is about one-half of what it should be. The factor that they used was from the -- the factor that was used

for the pollutant removal/pollutant loading model was a factor that was obtained from studies in the Pacific northwest. We really need to use a model factor that is specific to this site. The D.E.P. has done a lot of studies in the area and they have information available. Again, the pollutant loading model is about one half in the Draft Environmental Impact Statement of what it

should be. Correction of these calculations will show that the phospherous load to be able to remove that, reduce that is going to take considerably more treatment facilities than that is shown on the plan.

I would like to just also add a couple things. The hydrogeologist had commented with a very brief review of the information. One was his concern that the report shows that the groundwater depth is highly variable on the site. There's no information that really models what happens when you make a forty-foot deep road cut, what happens to the slopes and tables? The other is there's a lot of uncertainties that are omitted in the

modeling and he asked whether the model was accurate enough to be able to determine what is going to happen in the leach field. His other item was there's a comment made in the Section 8 of the Draft Environmental Impact Statement that there is sufficient time for the leachate to be adequately treated, but there's more supporting information of what sufficient is. Thank you.

MR. MONTESANO:

Let's take a ten-minute recess.

(SHORT RECESS TAKEN)

MR. MONTESANO:

Ladies and gentlemen, please take your seats.

MR. PIERRO:

Juan Palacios, you are on deck.

MR. CONNOR:

Good evening. I'm Edmund Connor. I live at 69 Concord Drive and 57 Woodstock Road. They are the same piece of property. What I share in common with the contract

holder on the Patterson Crossing site, Paul Camarda, is that we are neighbors in sharing two towns. However, Mr. Camarda on all his maps, I think you will notice on the DEIS, has left out the whole Town of Lake Carmel in his depiction of the area. He's included just the people on the eastern side of Concord Drive. The people on the western

side of Concord Drive, your constituents because they are in the Town of Patterson, are pregnantly missing along with the 1,500 other families that reside in the Town of Lake Carmel. If you look at a map, an aerial map that you can download from Mapquest, you will see we are there, we the people. We the people that you now represent. You represent us in Lake Carmel. We didn't vote for you. You weren't appointed by the people that we voted for, but our fate is in your hands and your good judgment is going to make or break our futures and our children's future. You have heard from a lot of lawyers, scientists, I just spoke to a woman who has a Ph.D. in chemistry and we are talking about the lack

of credential science in the DEIS. There is none. As a matter of fact, I think there's a lack in addition, multiplication, subtraction and division as well. For a guy with money bucks as big as Paul Camarda's, I can't understand why the man can't add. In section 1.3.1, paragraph 4, Paul's people referred to the 68.5 acres that some blasting will be

done. I think that phrase is misleading and in a moment I'm going to do some math and bore the daylights out of all of you. 68.5 acres is about 3 million square feet. You just need to go 43,560 times 68.5 and you get 3 million. Paul says he's going to take 119,000 cubic yards of stone out. That's 3,213,000 cubic feet. Across 3 million square feet, that's one foot. Yet, one foot of rock removal is going to level that site. There's a fifty-two foot drop from the western border of the site where the road emerges up along the western border which is right about 250 feet from my house. Less than thirty feet from Kathy Mulhill's house. Fifty-two feet below that is where building B

is going it stand. That's where the grade goes to now. In order to cut and fill that, you have to take twenty-five feet off one side of that property and dump it on the other side. I've just said you can only take 1.07 feet because you have 3 million cubic feet coming off 3 million square feet. Where

is the math on that? Who did the math? Who did the guy hire to do this? None of my students. Middle school kids can do better than that. They are required in my class to come better prepared than that. Joe D'Ambrosio was wrong and people in the Town of Kent listened to him and the people on the town board listened to him too. Joe, are you still here? So I want you to know that those people on the town board listened to you because they talked to me. I think he's right when he says that you in your heart of hearts are going to make the right decision? Ask yourself this question? This is Putnam County where the country begins. Do you want to be the town planning board that brought the city to the country?

MR. PALACIOS:

My name is Juan Palacios. You got the wrong idea like the Fishers that elect you guys. I do live in the Town of Patterson. I do ask you to make the right choice. There is no other choice in here, then say yes to having this Patterson Crossing because we are

electing the fact that this town does not have any places to shop, does not have sales taxes. All the people of Bedford, Chelsea in New York City, Bronx in New York City, Yorktown, they have everything. This is not a weekend place. This is my home. I've been here twelve years and I see taxes go up every year. I see the school board, Carmel Central School District looking for money, we do fund raisers for money. This project is going to help us. Where? We don't even have a soccer field to have the kids play. This will have that. You should make the right choice and the right choice is say yes to this. I don't know Paul, but you know what, thank you for having taken the time and allowing me to be able to plan this thing. We worry about

water. Please, that's the D.E.P., there are departments out there, agencies, let them do their jobs. We have lawyers here. Who is paying all these lawyers? I hope not my taxes. With all this money that we are spending in here, we could have fixed Lake

Carmel pollution a long time ago. Thank you.

MS. NAPIERKOWSKI:

I'm Audrey Napierkowski. I'm a twenty-year resident of Patterson. I did read the environmental review and wrote the Town of Patterson in prior responses to the county's environmental impact statement before having the county landfill placed in Patterson. I'll limit myself to two points tonight. One economic and one environmental regarding this draft statement, the rest I'll put in writing to you.

Build it, they will come and sales revenues will go up according to what is written in this draft. The "they" is the problem. A new Lowe's center is open in Danbury near Costco and Home Depot on Federal Road. Are "they," Connecticut residents,

going to travel farther into another state to spend their money in stores that they already have in their own area and pay our sales tax? Dutchess County has the Lowe's on Route 9 with a Home Depot, a Sam's Club and a mega Walmart. Are they going to travel farther to

spend their money in another county when they can get the same thing in their own stores and support their own county sales tax revenues? Lower Putnam County and northern Westchester, Mahopac, Putnam County, there's a BJ's just over the border in Yorktown and Home Depot in Mohegan Lake. Do you really think those people are going to travel along single lane on Route 6 to Route 52, 301 to 52 to 311 to come up here to shop when they can drive five or ten minutes one exit on the Taconic and straight in front of them is a huge BJ's? That's where they all shop down there. They are not going to drive thirty minutes trying to beat the traffic and trucks along Route 6 to come up here. The "they" that they are talking about, the "they" that will come, is just going to be the same

people that support Home Depot right now except you are going to dilute it between two locations. There's not going to be any more increase in local people there. On page 118, it's rightfully noted that Lake Carmel

already has existing problems or impairments with run offs. In the draft it states that there's going to be approximately 11,000 gallons of wastewater that will be treated before released back into the environment through subsurface discharge. That comes out to 3 and a half million gallons yearly of wastewater being put into the ground and then the statement ends there. What happens to that water years from now, decades from now? Once it's in the ground, where is it going. There's nothing in the statement about that. It also says that 19 percent of storm water will run into Lake Carmel. They said with all the mitigation, about 19 percent will go in, like it's a nothing number, but they don't say what 19 percent is. Is that one gallon per day. Is that thousands of gallons per day that will run into Lake Carmel? It

ends there. There are no studies, there is nothing written about once you put it in the ground what's going to happen. The impact statement ends with putting in over three and a half million of liquid run off waste into

the ground and then they have the nerve to say or glaze coat over that all our mitigation that we have planned will lead to no impact on Lake Carmel. I really can't see how any engineering firm, anybody who is going to write up an environmental impact statement can put a remark like that in a draft statement saying there's going to be no effect to Lake Carmel when they themselves wrote that all this is going to be put into the ground and they have no studies to say what you do or how you treat it after. The rest of my comments you will receive in writing by the 25th. Thank you.

MR. PIERRO:

William Brander, you are on deck.

MS. TITONE:

Good evening. My name is Tony Titone and I'm an over thirty-year resident of

Patterson. I also was the first woman elected to the town board and has been through a major controversy, probably the biggest one you have every seen in Patterson.

Although I agree with a lot of the statements made tonight, one of the things I've heard over the last thirty years is how our taxes are too high. People have said here it's not going to affect our taxes. A good development will help our taxes. Everyone is complaining about fire and police. Well, all the permanent homes that we put, all the building that we have done over the last several years, our houses that are $300,000 and $400,000 have added to our schools, to our police, to our water, to our fire, so I don't see there being a major impact in those services, especially in the school services. I would like to see, however, the tree line, some kind of a tree line going around this project so that there is more of a buffer and it would be nice to have a few more green open spaces, not just where the septic is in this project. However, one of the things we

really need to stop and look at is we don't want our neighbors to be totally affected, but if there's a state of the art drainage system, it's going to purify the water. If

there is a septic plant, and there is all kinds of studies, we all know you can say you can prove it both ways, I'm a teacher, I know, I've been through it, some will say no, this means that and some other people will say the exact opposite. Septic systems, if all kinds of studies are done properly it filtrate the water. When we did the A&P everyone was concerned about the aesthetics. I'm sure there is some way we can do some more with the aesthetic problems. Some may think there is, some may think there is not. I think it's important for Patterson and for our taxes. I know I'm not a popular person here tonight, I think it's important for us to look at a development that is going to work for everybody, but that we do need commercial development in the town. Thank you.

(Audience unruly outburst)

MR. MONTESANO:

Ladies and gentlemen, come on. I realize this is very important to us all.

Let's give everybody their time due. You have been courteous all night. Please let us hear what the people have to say.

MR. PIERRO:

Richard Reinhardt, you are on deck.

MR. BRANDER:

I'm Bill Brander and I live in Lake Carmel. Shame on us. Shame on us, the residents and elected officials of Lake Carmel, Kent, Carmel and Patterson. For too long we have allowed residential development to go unchecked. It makes you wonder who our local officials are working for. Now we are fighting with our neighbors. The results of the building boom are many. The schools are overcrowded, the buses are overburdened and worn out. The county aquifer is almost depleted. The wastewater treatment plants are inadequate. The roads are jammed. The additional storm water run off is multiplied due to the additional covered and paved areas

which contributes to the flooding and drinking water contamination. The building boom is brought on by the city-ites and

Westchester-ites looking for an escape on their high taxes. The only problem was is that they wanted all the amenities that they had in their old neighborhoods. My wife, son and I moved here fifteen years ago. She wouldn't speak to me for about six months because every time she wanted something she had to drive there. I'm still looking for the downside to this. Now she is loves it here. She likes the tranquility because she realizes that driving around is a small price to pay. The people coming here now don't want to change their ways, they want us to change for them. Fortunately for them, the carpetbagger sensed their needs and smelled their money and built townhouses and mansions on every available piece of property. All was going well. The town was growing like crazy. But now we needed new fire equipment because our old trucks couldn't reach high enough. Wait, we will buy new trucks. Wait,

they won't fit in our old firehouses. Okay, we'll build a new one. Wait a minute, now

the firehouse is bigger than the town hall and the police department. Okay, we will build a town complex, the Emerald City. Wow. Just one small hitch. How do we pay for all this? Panic sets in. We are grasping at straws. We can't raise taxes, they will tar and feather us. They will run us out on a rail. Look, on the horizon, it's carpetbagger number 2, the commercial developer. He says if we build our worries are over. Taxes generated by sales and real estate taxes will solve all of our money problems and provide new jobs. Now we will see how this all came together. Look to the east towards Brewster Highlands. The only bright spot you will see is the reflection of the lights against the night sky. The top of the mountain has been flattened and what was once only going to be the Home Depot and Linens & Things has evolved into a mini city. Southeast taxes have not gone down and the help wanted signs go unanswered. Meanwhile,

two local hardware stores are closed and Dills, a good labor who has been very

charitable to a lot of different causes, is barely hanging on. So if we put a Lowe's in, is that going to be the death nail for Dills? The latest and perhaps second greatest carpetbagger next to Ed Hulan, is Mr. Paul Camarda. He has picked up the torch and continued Mr. Hulan's vendetta against Carmel. The vendetta relates to the town's rejection of his proposal to build the Danbury Mall here. Mr. Camarda wants to feed his ego, fill his pockets avenge the wrong against Mr. Hulan. He lives in Ridgefield, safely insulated from the dangers of a development like his. The roads are so narrowly twisted they can barely fit his car and ego. Remember when Patterson Crossing was only going to be Lowe's and Bed, Bath & Beyond and maybe a couple other stores? Look at the new plan. Stop the madness. Stop Patterson Crossing. Remember, once the hill is gone, it's gone forever. Along with our peace and tranquility. Putnam, where the

country begins will now become, Putnam, where

the concrete begins.

MR. PIERRO:

George Lanfrenachi, you're on deck.

MR. REINHARDT:

Rich Reinhardt from the Town of Patterson. Thirty-four year resident, came here in 1970, bought land, had the house built in '72, raised four beautiful children here and we love Putnam County. I've been a realtor for nineteen years and I say realtor because the salesperson can sell house, but a realtor is held to a higher level. I took an education course, continuing education course that we were mandated to take and an older gentleman seasoned in real estate told me don't get involved, stay in the background, it might affect your business. In situations like this, Putnam dumps on 311, I have to get involved. There's bigger issues. American Indians, their heritage said think seven generations ahead. What you do today will affect seven generations down the road. After a few years in real estate I had to

show a house on the other side of 84 and it

said Patterson and I said that's got to be wrong, it's Kent, Patterson is on the right side and Kent is on the other side. I was to find out that it was Patterson. A few streets of Patterson was over that way. These houses, summer homes, shallow wells, if this development goes in it could possibly lower their water levels. A home is a man's castle. Most people's homes is the most valuable thing they own. If you are near a development, your value is going down. Less people will look at your house. The first person that sells the house there, that value is going to go down, because the price they sell at is going to be lower than the average house away from the development and all the neighbors are going to run to the assessor and want to lower their assessments which will lower their taxes which will impact everybody else's taxes. That's all I have to say. These folks, the most important things is -- valuable thing is their home. The man's home is his castle. He wants to come

home, put his feet up, raise his children. First one that sells out you will see the light. I'm between the 18 and 19 exit. Ironically we came here in 1972. My wife said there is no shopping. Ironically I said I'd rather go a half-hour to find some stores to go to rather than have it in my backyard. We live three and a half miles from the Highlands. There's four traffic lights now that weren't there before I bought my home. So I think you ought to do the right decision. Thank you.

MR. LANFRENACHI:

My name is George Lanfrenachi. I've been a resident of the Town of Kent for twenty-four years. I think the first thing you should consider is that no major shopping center has ever been built in Putnam County in or next to an existing residential area, neighborhood, it hasn't happened. Look at the one at 19 with Home Depot, there's no residential neighborhood around there. Putnam Plaza, no residential neighborhood. This is right next to people's backyards.

They are going to look out their backyards and you will hear the noise, all night deliveries, all night lights where they once had trees. People own property and I'm not some crazy liberal that's opposed to any development. As a matter of fact, I'm a conservative, registered conservative my whole life, but the pursuit of money and pursuit of capitalism does not give people like Paul Camarda and the people he represents a license to destroy people's lives and people's property values. It's not right. This is a densely populated neighborhood. Now, they sent out this map of the property. You can see all the houses there right next to the shopping center. It's wrong. Now, it's funny, there's this mass mailing, I don't know, how many people got this? This is pretty funny because last year Paul Camarda was complaining because one of our town council people, Kathy Dorothy, was at a bake sale to raise money to sell signs so people could have a little sign on their property to stop Patterson Crossing.

So this lawyer came to the town hearing and he said I have pictures of Kathy Dorothy, she is at this thing where they are raising money and there was nothing illegal about it. You want to hear something that I don't think -- I guess it's not illegal, but pretty unethical. I was told that our county executive, Bob Bondi, that his son is working with Paul Camarda. Now, if you have people that close to people that are running the county, how can an ethical decision be made? There has to be an arm's length. People are going to make a lot of money on this project. I've got no problem with people making money, but people are going to get screwed. This is people's neighborhood. It's not right putting that thing there. And then on this very same thing, is says 3.5 miles west of exit 19, Home Depot. I'm wondering, what are they going to put here that you can't get 3.5 miles away. They are putting in a Costco, maybe they can get a twenty-five pound can of tuna fish at Costco that maybe they can't get at Home Depot or maybe a 600-bundle roll of

toilet paper that they can't get at Home Depot. You are destroying people's lives and people's property value. I understand people are trying to make money, but what about the people in here that moved up here and there's no shopping and now you are complaining there's no shopping? Beam me up Scottie. There's no intelligent life here. Thank you.

MS. ECKARDT:

Good evening, ladies and gentlemen, thank you for giving me this time to speak. I'm Lynne Eckardt, Chair of the Putnam Smart Growth Alliance, but I'm speaking for only myself tonight. I'd like to take a moment to talk about taxes in Southeast. I'd like to tell you how the Highlands have affected my taxes in Southeast. I'm a twenty-seven year resident. Let's first take the assessment. The Highlands are still not on the full assessment. The Highlands assessment of '06, I've taken the liberty rounding these assessments off to make this presentation easier. Kohl's is 8.3 million, Home Depot 12.8, Linens & Things which includes Marshals

and Michaels 12.3, Applebee's 1.9 and Dunkin' Donuts one million. The grand total here is 36 million and change and after seven years we are not quite at total build out. Kohl's, Home Depot and Linens & Things have religiously agreed their assessments which I was told by the Southeast assessor today is routine as they have a legion of attorneys on staff. While these companies have not been awarded any tertiary settlements, it does cost your town money to defend these assessments. How have these fabulously high assessments translated into taxes benefits for me personally? I've gone back five years to illustrate what exactly the tax benefits of my town have been. Interestingly my 2006 assessment is around 408,000 which makes my house as average as you can get. For the record, and anyone that has ever been to my home can attest, there has been no major improvements made over this time period. In 2003, my town and county taxes were $1,277. By 2006 they have risen to $1,567. That's a 23 percent increase in four years. Remember,

Southeast relentlessly tells us we have the lowest taxes in Putnam County which I question looking at these figures. We have probably the least amount of services. I say this now because this is the bill of goods you are sold day after day by our elected officials and commercial developers. As far as my school taxes, my school taxes in 2002 were $3,924. In 2006 they were $6,200. That's an increase of 58 percent in five years. Believe it or not, except for a senior housing complex which obviously hasn't added children to the district, there have been no major subdivisions built recently in Southeast. Finally, given the increase traffic, lack of tax savings, compromised water and air quality, I'm hard pressed to find all the benefits Patterson Crossing will bring. As far as I can tell, adding to the tax base simply means there will be more money for your elected officials and schools to spend because believe me, it is not going back into your pocket. Thank you.

MR. WEITZNER:

Good evening. My name is Michael Weitzner. I want to make one brief comment that might make your decision easier. This is not a zero sum game. It's not can you do something to benefit the taxpayers of Patterson or should you do something which will detriment them and benefit the residents of Carmel. It's not a stark choice like that. Obviously there's a substantial detriment to Lake Carmel, that's why this has been fought for so long. The positive impact to Patterson whether taxes will be helpful or not is open to question. Reasonable men differ about that. Assuming that that is the case, that this will be a positive tax benefit, you can safely say no to this project and not detriment your citizens in Patterson. The reason is we all understand there is unrelenting pressure for development all over the county and all over the state. If you say no to this, invariably there will be another opportunity to say yes for some other project appropriate for this site.

MR. DURKEE:

My name is Ed Durkee. I live in Lake Carmel. This process that we are going through is extremely emotional as is obvious. Your decision can be fundamentally made only on or primarily on this part of the document, this part is just traffic of the document, it's about 1/20th of the entire package. I worked with Stop Patterson Crossing for one year now. We have worked with other people to try to look at this package. I want to say this is an ethical choice, this is about my house, emotions, but we know this is about money and politics and salesmanship. Given that that is the case, and that's the way politics is, I'm not saying one way or the other, but that's the way it works. You guys are influenced, we are influenced, the Kent Town Board is influenced (inaudible). It's a incredibly complex series of issues and pressures that you need to balance. However, I want to say one thing about salesmanship. Mr. Camarda who is in the back is a very, very smart gentleman and he's a terrific salesperson. This document is a terrific

sales document. You must read it through thoroughly. I'm not condemning that. That's his job. It's also your job to thoroughly analyze the DEIS and understand where the failures are and where the contradictions are. By that, simple thing like in the marketing section, most of the people that are going to be coming to this project will be coming from Carmel, further down, Patterson, Kent, but if you look at the traffic, they are not coming from there, they are coming from 84. When you look at the traffic volumes and the proposed traffic volumes and the way he's articulated here, most of the traffic will be coming on 84. If you look at the population centers, they don't live on 84 or the 84 corridor. They live in Patterson, Kent, Mahopac. When you start to really examine in detail the way these numbers fit, they don't. It's very important to get below the emotionality and look at these numbers.

I will be submitting traffic details tomorrow. I want to say one thing about

traffic. There is a tremendous volume of statistics. Two or three days ago on 84 and 311, two people died in a terrible accident. I was there thirty seconds after it happened. You're talking about an increase in traffic of 1,500 cars per peak hour. If you look to find any assessment of how that will affect back up on 84, there isn't any. If you look to find and look at the intersections of the mitigation process that he's put in place, they all need to be the lowest level of service. That means a particular amount of delay. If you have 1,500 cars per hour coming into an intersection and you have a five-minute delay, that means there are 100 more cars behind you waiting to turn left off of 311 into the project. That means within a seven-minute period of which I timed a person coming off 84 the other day, that there will be basically 130 more cars behind you waiting to turn left or right into Patterson Crossing. This is in the document where it says these things will be mitigated. However, if you look at the page at the very

end of the traffic, there's a long list of things that will not be mitigated on a permanent basis or that will still be a problem. What are they? Delays in traffic. Traffic volume. Noise. Pollution levels. There's a page where it essentially says that. So you have a sales job where you are going through all of these things, providing all of these numbers spread in an very unorthodox method within a standard Draft Environmental Impact Statement and then you look at the end and there's a -- I'm asking for a very unemotional, thorough between the line analysis of this document. And I also request that there be a supplemental SEQRA done on traffic.

MR. PIERRO:

Is anyone signed up at the back table to continue to speak? I make a motion to continue this public hearing tomorrow evening at 6 p.m.

MR. ROGAN:

Second.

MR. MONTESANO:

Seconded by Shawn. All in favor?

(Board in favor)

MR. PIERRO:

Good evening, ladies and gentlemen. Thank you for your cooperation.

STATE OF NEW YORK)
) ss:
COUNTY OF ORANGE)

I, PATRICK M. DeGIORGIO, a Shorthand Reporter and Notary Public within and for the State of New York, do hereby certify that the foregoing is a true and accurate record of the minutes having been stenographically recorded by me and transcribed under my supervision to the best of my knowledge and belief.

X_____
PATRICK M. DeGIORGIO

Dated: September 25, 2006

STATE OF NEW YORK

COUNTY OF DUTCHESS
- X

Public Hearing:

In the Matter of Patterson Crossing

- X

DATED: September 14, 2006
Patterson, New York
6:00 p.m. - 8:40 p.m.

Patrick M. DeGiorgio, Reporter

CONTINUED

PUBLIC HEARING

MINUTES

APPEARANCES:

Planning Board
Mike Montesano, Vice-Chairman
Shawn Rogan, Board Member
Maria DiSalvo, Board Member
Dave Pierro, Board Member

Melissa Brichta, Secretary

SANTANGELO, RANDAZZO & MANGONE, L.L.P.
Attorneys for Town of Patterson
151 Broadway
Hawthorne, New York 10532
BY: ANTHONY J. MANGONE, ESQ.

MR. MONTESANO:

Ladies and gentlemen, please take a seat. Good evening. Welcome to the Patterson Planning Board's public hearing on the Patterson Crossing project. If you would please join us, the flag is to the right.

(Pledge of allegience)

MR. MONTESANO:

As I said, welcome to the Patterson Planning Board's public hearing on the Patterson Crossing project. I'd like for everyone to acknowledge the location of the emergency exits. If for some reason the doors you came in through are blocked by some emergency, please use one of the other clearly marked exits to leave the building.

Tonight's meeting, if would you like to speak, please sign in at the front door. You will need to sign in in order to be heard this evening. When called, and you will be called in the order in which you were signed in at, you will come up to the podium and be given five minutes to make your presentation. Board member DiSalvo, who is sitting two

spaces to my left, is the timekeeper and when approaching the five-minute mark will hold up a yellow pad which will be your indicator, meaning you have about fifteen seconds left, so to begin to wrap up.

Please also at this time take a moment to either turn off your cell phones and pagers or put them on vibrate mode so that we don't have any distractions. We will make a decision this evening about several requests last night for a thirty-day extension for the time period for written comments. We need to speak with our legal counsel prior to making that decision based on some information that we have since last night in terms of the time frames for public notifications, so we will have that decision, but we do not have that decision at this point in time.

Without any further ado, I'd like to turn over the meeting to David Pierro and have him call the first person to speak. He will also let the second person know that they are on deck so that you can be prepared to speak.

MR. PIERRO:

For the audience's edification, I'm David Pierro. To my left is Shawn Rogan. Additionally Mike Montesano and Maria DiSalvo, planning board members, and Melissa Brichta is our recording secretary. Dorothy Hayden followed by Bridget Kayser.

MS. HAYDEN:

I would like the record to show that I am very much in favor of this Patterson Crossing because number 1, we do need tax relief and I don't understand -- I'm a resident for more than sixty years in this town and I have seen a lot of changes and that is quote progess unquote so I was told. This is another progress that will have to go on with the increase of the population around. We do have to grow. As far as traffic goes, I live right at the corner of South Street here and believe me, what I can consider would be in those two proposed buildings, businesses, the larger ones would not generate more than what one train does in front of my house every hour on the hour.

With the increase in the trains, you are going to have more population. That property will be eventually sold for more housing developments meaning more school taxes. As a senior citizen, I can't see any more increase. We do need a tax base and I am in favor of it.

MR. PIERRO:

Marsha Thompson, you are on deck.

MS. KAYSER:

My name is Bridget Kayser. I've been a Putnam County resident for over fifteen years, over ten years in the lovely Town of Patterson. Over the ten years I have seen a lot of changes as well. I have seen my tax double. I have also seen a lot of property come off the taxes roll and go up to conservation. Patterson does have some conservation and properties available for people to go on nature walks and to take care of those types of things. My reasoning for supporting the Patterson Crossing are totally selfish. I currently drive to Costco in Connecticut. I come from my home off of 164

and get off exit 18. I drive from exit 18 with the price of gas, which I know is coming down, and my car, to go to Danbury is a lot. I would be happy to stop at exit 18, not pollute the air and save gas and also save some time and effort. I've seen a lot of things come into Patterson. I'm standing in one of the most recent additions that is nothing but a plus for us. I've enjoyed the pilates here, I have taken advantage of it and I think this will be another wonderful advantage for the Town of Patterson. That's all I want to say, other than, shop Putnam.

MS. THOMPSON:

Good evening. My name is Marsha Thompson. I'm president of Patterson Chamber of Commerce. I've been a resident of Putnam County since 1980. I'm delivering to you a letter written by Tony Lemelli (proper noun subject to correction), a member of our board of directors of the Patterson Chamber of Commerce. Last night he delivered to the town planner, Richard Williams, a petition in support of the Patterson Crossing Retail

Center signed by approximately 500 additional people. (Inaudible) in support of the Patterson Crossing Retail Center be submitted to your board for the record. As you may recall, at the scoping session for the Draft Environmental Impact Statement, Mr. Lemelli submitted to your board another petition in support of Patterson Crossing Retail Center signed by approximately 1,000 people. The second petition brings the total number of signatures to approximately 1,500. Our website is being hit all day long with people signing the petition in favor of, but we haven't had time to date to pull them here tonight. We respectfully ask that you, your board, consider this very substantial support for the Patterson Crossing Retail Center in evaluating such application and along with the comments made at this public hearing regarding project need and benefit.

I just have a short personal comment. As the president, the chamber recognizes and supports all commerce in our town. That's what we are about. We are here to encourage

it. On a personal level, I came to this community in 1980. I've owned homes in this town. I have raised two children in the Brewster School District. My children can't afford to buy houses in this town. The tax base is extremely high and the per month tax rate that they have to put away is just impossible. The shopping center will by no means be the major reductions of taxes, but it has a very positive probability of helping us all stabilize the ever-increasing rate of taxes. No one, including myself, likes to see our area of beautiful environment eroding beyond repair, but something is going to be built on our commercially zoned land in this town and all of us should allow our officials and oversee our officials in bringing any project like the Patterson Crossing to meet all codes and proposals instead of fighting over them. We need shopping in our community and we need jobs. I urge you to approve the shopping center. Thank you.

MR. PIERRO:

Brian Schwarzl, you are on deck.

MR. KUCHTA:

Good evening. My Dan Kuchta, 63 Sunset Drive in Patterson. I respectfully request of you guys to honor the thirty-day extension for written comments. I intend to submit written comments in addition to the oral comments I make tonight.

I have some specific comments on the Draft Environmental Impact Statement. Figure 4.8-2, appendix K9 and K10 contain a very serious flaw in the existing volumes between Fair Street and Ludingtonville Road. There are 147 eastbound and 154 westbound vehicles unaccounted for in the p.m. peak hour flows. The westbound Route 311 flow has 497 vehicles per hour leaving Ludingtonville Road intersection and 651 vehicles per hour entering the Fair Street intersection. There's nothing between Ludingtonville Road and Fair Street on Route 311 to account for the missing cars. This is a serious flaw propagating throughout the analysis which have generated large errors in the traffic

study. This discrepancy must be corrected

and the traffic study should be redone. On page 4.8-10, the Draft Environmental Impact Statement needs to document the traffic at peak p.m. hours studies for Fair Street and Route 311 which are actually higher than the traffic during the peak p.m. school hours. If not, then there should be an evaluation of the project's impact during peak school hours, same applies for the intersection of Route 311 and Terry Hill Road. Appendix M, table M2, the trip generations rates for the Chestnut Petroleum project on Route 311 almost opposite the Patterson Crossing project entrance of 0.2 for I.T. code 495 and 2.811 I.T. code 418 are major underestimations of the trips generated right on the specific site in the DEIS or rerun the analysis or explain that somehow the analysis was done correctly. Specifically code 814 is not appropriate as it applies for a specialty retail center. This analysis should have used 852 per convenience market.

Accordingly, the trip generation rate for code 945 should have been 6.69 for fueling

position for 48 trips per thousand square foot. For code 852 there should 1,750 per thousand square foot. Additionally, the Chestnut Petroleum has a special diesel pumper and attempts to function as a truck stop at certain hours of the day. The traffic analysis did not include this truck traffic and needs to be re-evaluated. On page 3-5, table 34, the state sales tax revenues need to be adjusted downward to properly account for the change on sales tax on clothing that went into effect in April 2006. An estimate of the change is as follows: The clothing store is going to be 20,000 square feet. This translates to roughly .44 million in sales taxes that will not be collected by the state. The proposed sporting goods store of 22,000 square feet which is similar to a Sports Authority will generate 53 percent of its revenues from apparel and tax exempt shoes. This is another .62 million of lost sales tax

revenue. Additionally, the Costco did not include tax exempt clothing in the analysis.

I estimated as much as $1 million in sales tax revenue will not be collected and the Draft Environmental Impact Statement needs to properly account for this. On page 311, table 3.6 indicates that the project may potentially create 516 jobs. The use of the (inaudible) may be inaccurate. Consume is the most accurate term to be used in the DEIS. At this moment, many of the stores surrounding the region have help wanted signs. On September 10th, Marshall's, Kohls, Dunkin' Donuts of the Highlands, Dunkin' Donuts of Patterson, A&P in Patterson and Brewster, Patterson Auto Body all had help wanted signs displayed prominently outside their stores. There are not enough workers in this region to fill the types of jobs that Patterson Crossing creates. As a result, the project will likely (inaudible) from existing jobs, thus consuming jobs, not creating them. In the August 23rd issue of the Penny Saver,

there were twenty-three pages of help wanted ads, roughly 690 positions available. There simply aren't enough workers in the immediate

area to support this project. The DEIS needs to take this into account and properly address this issue. I'll submit written comments. Thank you very much.

MR. PIERRO:

Tom Maxson, you are on deck.

MR. SCHWARZL:

My name is Brian Schwarzl. I bought my house here in Lake Carmel about eight years ago. Now I have a family. I have a little one and a half year old and my wife doesn't work and I've seen my property taxes go up, almost doubled, and my little guy needs diapers and food and we need to buy in bulk and we need to save money. We seem to be always driving to Danbury to do it. I don't know where else to shop around here. In order to buy in bulk, we go to Costco, we go to Walmart, we go to Target. I don't know any one of those stores in Putnam County. As far as I know you can't by a TV in Putnam

County or computer or a decent suit. We need shopping. It was great when the Home Depot came over here and we got them to thank, but

we need more. My house is only about two blocks away from the development, so, you know, it will be great to have it nearby. I don't see how it can make any negative effects maybe except a little more traffic. I think we can use a stoplight off the exit, off of exit 18. I work in Westchester, rush hour coming down it's hard to make a left turn off that exit without a light. That's pretty much all I have to say. I'm in support of the project. Thank you.

MR. PIERRO:

Judy Terlizzi, you are on deck.

MR. MAXSON:

Good evening. My name is Tom Maxson. I'm a eighteen-year resident of the Town of Kent and Putnam County and a student of local history. I'd like to make some comments on the Draft Environmental Impact Statement, specifically the historic and cultural impact

sections of the document. The Draft Environmental Impact Statement states no historic resources are located on the project site. Therefore, the proposed project would

not result in any significant impact to the historic resources, but curiously absent from the reference material list in appendix A the DEIS is the most comprehensive historic work covering the history of this area, William S. Perelatrose History of Putnam County, New York, originally published in 1886. Perelatrose's description was found on pages 704 through 706, and this is a copy of Perelatrose which is available in all of the local libraries. David Kent, who for many years was one of the most prominent citizens of Putnam County, was born the son of Elisias Kent who was born in 1749. David Kent was born in the Town of Kent on September 3rd, 1792 on the farm now owned by Samuel Terry and where his father then lived. Per appendix N of the DEIS, 1854, 1867 and 1876 maps of the Town of Kent and the Town of Patterson during that time period showed that

the same (inaudible) farm was located what is now south of Route 311 along the western border of the Town of Patterson. As Perelatrose states above, the Kents lived on

the property prior to the Terry family. Elisias Kent was a member of the Patterson Baptist Church then known as the First Baptist Church of Fredrickstown. Perelatrose goes on to state that Judge Daniel Kent was born October 18th, 1782 and died June 1st, 1860. He was one of the judges of the Court of Common Pleas and a very influencial citizen. As shown in Appendix N of the DEIS, the RFO map of 1804 shows both Judge Daniel Kent and his son Samuel Kent Farms located within the project development area. This is confirmed by the federal census data of the 1800s for the Town of Patterson. The 1860 census shows that the real estate value of Judge Daniel Kent's farm was $15,000. This amount given the time period and other relative property values indicates a very large farm, probably extending 600 acres or

more. Samuel Kent's farm is listed with a value of $8,000, indicating it was at least 350 acres or more. Now, Perelatrose goes on to state that following the death of Samuel Kent in 1875, his son Charles took over the

family farm and is found now in the 1900 federal census for the Town of Patterson. Historic maps also show H.S. Kent on what is now Route 311 near Terry Hill Road in Kent, this was Harry S. Kent, the grandson of Elisias S. Kent. He was married to Phebee Washburn whose family owned the farm directly across from the development area. Not surprisingly the Town of Kent was named after the Kent family in 1817. This extraordinary act underscores the significance of the family in the social, religious and political development of the town. The Kents are all buried in the Patterson Baptist Church Cemetery. Appendix N of the DEIS also shows a current site map of the area. Just down Route 311 a short distance to the west of the proposed development, the location is denoted as Kent Corners. This was also named after

the Kent family. Appendix N also states that the study area seen as unlikely to contain structural remains and cultural features related to the early European/American occupation of the area. Of course, it's

impossible to properly evaluate the presence of structures and foundations when the developer has moved literally thousands of rocks and boulders across the property. The DEIS is clearly incorrect when it dismisses -- (interrupted)

MS. DISALVO:

Your time is up. Thank you.

MR. PIERRO:

You can submit the rest of your comments. Gail Brajerucl, 31 Haviland Road, you are on deck.

MS. TERLIZZI:

Good evening. It is with a great deal of sadness that I stand here before you tonight. Sadness because friends and neighbors are at odds, sadness because our whole lake community is really (inaudible)

and sadness because things don't have to be this way. Other people more dedicated and much more educated and intelligent have reviewed the Draft Environmental Impact Statement and found their flaws. Last night we heard concerns from very well educated

people about the water quality, blasting, air quality, bad design that doesn't fit in with the landscape and surrounding community. My comments tonight will focus on the parts of the DEIS that I have studied.

On page 4-6.7, I believe I may have that wrong, the applicant predicts 19 percent storm water run you have from the impervious surfaces and that will drain into Lake Carmel. This water will contain parking lot debris, gasoline, antifreeze, oil and other garbage. Last night we heard about rat poison used on the site. Will this get into the water supply, either through drainage and/or through seeping in the groundwater? How much is 19 percent if we get a 100-year storm? How much is 19 percent if we get a 300-year storm? I think these are questions

that need to be explored. I'd like to add in a 100 percent of all storm waters will be drained from the impervious surfaces and will not be available to recharge our wells, the aquifer and perhaps even the lakes. This issue does not seem to be addressed. On

4-6.6, will the applicant install the most recent storm water recommendations? I believe it's MF-4. Will that be mandated by the state or will that cost be passed along to the taxpayers at a future time? On 4-7.3, Mr. Mainero addressed wildlife last evening. How does the applicant even suggest how wildlife will move across 84? Will they levitate? Will he build a bridge for them? More than likely (inaudible) road kill on Route 311 or Fair Street or try to move into our heavily populated areas competing with existing wildlife. We have lots of wildlife already. The only way to ensure -- on 4-7.4, the only way to ensure that open space stays open space is through a conservation easement, deed restriction and plat notes do

not cut it. Mr. Hevesi, State Comptroller, recommends that the county rely on no more than 25 percent sales tax per budget. PC latest budget relies on almost 40 percent. This is not a good fiscal plan. It should be noted on page 3-5, the applicant said it should be noted, that the projected property

and sales tax revenues are estimates of some of the actual uses and future tenants of the center are not known at this time. The actual tax revenue generated by the proposed development may vary from figures presented above based upon (inaudible). That can go either way. People are counting on lots of tax relief and get much less than anticipated. Page 3-9, there's no data to show local stores will benefit from this project.

I'd like to conclude my remarks about the children. Children are our future. All generations and all societies are hopeful that their children will have a better life than they have. They are not mentioned anywhere in this document. Lake Carmel is a

park district. That's not mentioned anywhere in this document. It's a community that has existed since 1930 and is made up of 2,500 homes with approximately 8,000 residents. They will live right next to this project. Not mentioned anywhere is our children as pedestrians. They will use the roads for

walking and bike riding to get to beaches, visit friends and to get to the local stores. They walk on the East Lake Shore Drive and West Lake Shore Drive, Towners Road and every road in this community. That's the benefit of living in a park district or at least one of them. We walk -- (interrupted)

MS. DiSALVO:

Thank you. Your time is up.

MR. PIERRO:

Susan Russo, you are on deck.

MS. BRAJERUCL:

My name is Gail Brajerucl. I came to Putnam County in 1968. I worked for a big retailer. They will make you promises. They don't hire full-time. They don't pay top

salary. If you go up to Highlands in Brewster you can see the signs for help wanted. You want a safety issue? I have at a in the back in a wheelchair right now that was hit by a tractor-trailer on Route 6 in Carmel. He didn't see her. What is going to happen to our children? I raised my child her. I live in the park district. They are

going to make promises to us they can't keep. I'm here speaking to you from my heart. I have nothing written down on paper. I feel very passionate that this project should not go forward. If this gentleman in the back wants to buy big bulk and he wants to go to Costco, tell him to go to ShopRite, they are cheaper. If this project goes through, I might as well go back to Westchester, lower Westchester, because that's what our county is going to look like. Please think seriously what is going to happen and how this will affect us. Thank you for your time.

MS. RUSSO:

Susan Russo. The background quality

air studies that were done were cited in there from 1983. If I am correct, this is the year 2006. They really need to be redone. You can't be using studies from twenty years ago. I also am including a quantitative impact analysis related to the construction activities as it was not performed based on the studies done in 1983.

It needs to be done because the children in some cases are living seventy-five feet from the actual site. Everything in the Draft Environmental Impact Statement is -- well, if the people who are doing the trucking, if they do this, if they do that, we need some guarantees to keep the dust levels down, to keep all the construction debris from flying all over the place, that these are all in place. I don't want any ifs, would haves, should haves and could haves. My child lives two miles away from the site and she has asthma. I have to give her more albuterol every day, things like that, I'm going to start blaming each and every one of you

because we need you to make sure each and every one of our children are safe. Within the DEIS, they had said that there was no sensitive related to -- related to sensitive area. Clover Lake which is a senior residence, they are one step away from a nursing home a mile and a half up the road. We need to keep that into consideration. I clocked it today, it was a little more than a

half mile going by the streets, but if you take a straight line it's within that half mile, that needs to be in the DEIS itself. I'm also asking for during construction the law that the trucks cannot idle for more than five minutes at a time. That's before construction and after delivery times. Who is going to monitor this? It's a law, but there is no one that monitors this. We need to have this in the Draft Environmental Impact Statement to make sure this isn't going to happen. The diesel trucks, the idling of them and the coming in and out, that's one of the major causes, a direct correlation on asthma and also lung cancer.

We have already filed the -- with the American Heart and Lung Associations with our air quality. This is very, very important. Who is going to be responsible for this on an ongoing basis? I'm also requesting, besides the quantitative impact analysis, an independent project manager who will be there to oversee. Not somebody from the town, not somebody from the state, an independent

person to come in and make sure because it is important. The other thing that I really felt strongly about was what Judy just said about, there was no mention within the DEIS about Lake Carmel being in the park district. Besides the traffic for the children going across 311 to 52 to get to the lake, there's a lot of traffic going across 311 to get to the pizzeria, and beaches. There's a lot of foot traffic for the people going to the Lake Carmel Deli, there's a bar there, also a laundry place and there's a lot of people that go very fast. Even if they talk about a light, if not somewhere (inaudible)

crosswalks which is going to back up the traffic further. I live off of Towners Road. I can tell you now there was the increase in traffic from Route 6 when they were doing the different bridges, that has a crossway to go to ShopRite on 52 and all the way over to Fair Street. That is a lot of foot traffic. I don't even let my kids go across the street to get the mail anymore. I wanted to express my concern about the foot traffic that was

not in the DEIS. Thank you.

MR. PIERRO:

Lisette Kubie, you are on deck. Sorry, Lisette, you are up now. Arielle Kubie, you are on deck.

MS. KUBIE:

Good evening. My name is Lisette Kubie. I live in Putnam Lake, Town of Patterson since 1982, and in the county my entire life. I did not prepare any written statements, I'm speaking briefly from my heart. I see no need for this development. I spent a limited amount of time reading section 3 of the DEIS which addressed the

benefits, these wonderful benefits that this center will bring us supposedly. I don't buy it. It predicates on the fact that I can get a cup of coffee, a potted plant, sheets, a screwdriver or things within five miles in any given direction currently. What I see this shopping center is representing is just another cookie-cutter sprawling shopping mall that will present us the same retail opportunities as any other given one that is

polluting this nation from coast to coast. It's a national cancer. They want Applebee's, Chili's, whereever there is a Costco there is a low -- excuse me, wherever there's a Home Depot there's a Lowe's, where there's a Costco will be a BJ's. It's the homogenization of America. There's plenty of local gardening centers, local place to get anything you need. I don't need to be able to get into my SUV after moving up from Westchester because I can't afford the taxes, everyone moves up here because they want country. I'll tell you why the taxes are so

bloody high, because of the development. They have no (inaudible) and we simply walking down the same chute to the slaughter house as every other community in this country seems to be doing. I don't understand it. I plead with you, say no. Save trees. Save some semblance of a hillside. Like the woman said before, there's help wanted signs, go to any shopping mall in this area, help wanted, they can't get people. These are not quality high

paying jobs, not offering benefits, not offering living wages. The high school kids don't want to work at these places. It's not going to save us taxwise. It's going to sell us down the river aesthetically. Traffic will be a nightmare. I want to know what happens to the water quality when New York City starts suing the town because we dumped all this crap in the water. Who is responsible then? I don't think Camarda is going to come up and pay our legal fees. You can drive any direction in five minutes and get anything this new mall is supposedly

going to offer us. I would like to thank you for your time and also call for a thirty-day extension on written comments.

MS. KUBIE:

My name is Arielle Kubie. I've been a life-long resident of Putnam Lake which is a community in the Town of Patterson. My mother touched on it briefly, but I'd like to say my father and I would like to raise the issue of our community's liability in the case of the contamination of the New York

City Watershed after this area is developed. Beyond our own concerns is the protection of our land, economy, property values and the future residents of our community. We are stewards for the water supply of the City of New York. Even if there isn't legal grounds to prevent this development from happening, based on our own emotional reasons for not wanting this place here for our love of our local businesses, our love of taking a walk through the woods in our backyards, our love of being able to feel safe with our children,

our neighbors' children, going out and not worrying about high traffic and having a safe community for our children, then I'd like to raise that legal issue of what if it does happen that there are communities pressing charges in New York City if it begins to rapidly decrease the quality of water to New York City. That's all. Thank you.

MR. PIERRO:

Ray Maniero.

MR. MANIERO:

I am Ray Maniero. I've been here since

1963. I came up here mainly to get away from stores. That's why most of us moved up here. We came up here to the country. People say we need shopping. They came up here, oh, they need stores. What was their first clue when they moved up here? Didn't they see that there was no stores?

MR. MONTESANO:

I need a minute.

(OFF THE RECORD DISCUSSION)

MR. MONTESANO:

I'll make a motion in this regard that each person be given a five-minute time frame and then they can submit their written comments after that if they don't have enough time. So moved.

MS. DiSALVO:

Second.

MR. ROGAN:

Take a vote. Yes. I go along with it in this particular case.

MR. PIERRO:

I'm going to vote no.

MR. MONTESANO:

Mr. Maniero, I appreciate your time.

MR. MANIERO:

I can speak after?

MR. MONTESANO:

No. Ladies and gentlemen, the motion was just made to allow each person to speak for five minutes. In fairness, the intent of the meeting was to allow everyone to speak for five minutes and not to allow the public

hearing to continue if there is people additionally that have something else that they want to say and to speak for fifteen or twenty minutes. That is not the intent of this public hearing. The intent is to allow five minutes to address the board. At such time, if you are not done after that five minutes, that's the reason we allowed public comments submitted in writing. The motion that was made was that five minutes is what each person has. If you haven't gotten through your comments, then you need to submit them in writing. In fairness to

people that spoke last night, they didn't realize if they came tonight that they could speak again.

MR. MANIERO:

Mr. Montesano, I think what you said last night was after we got through, we could wait at the end of the line, sign up -- (interrupted)

MR. MONTESANO:

I said no such thing.

MR. MANIERO:

Let me finish. You said we can wait at the end of the line after everyone gets through speaking that if we had additional comments we could make them tonight.

MR. MONTESANO:

I would have to go back to the record. I definitely did not is a say last night.

MR. MANIERO:

Are there any notes of the meeting? That's the way I interpreted it. That's why I came here tonight and that's why many other people came here tonight.

MR. MONTESANO:

I'm sorry, I did not say that last night.

MR. MANIERO:

I don't understand. Just one thing, I submitted some notes. I do all this dictation by voice and there was so voice errors and I'll resubmit it, would you please accept that?

MR. MONTESANO:

Sure. Thank you. Anne, given the

motion we just had, you spoke last night. Thank you very much, Anne.

MR. PIERRO:

Carl Rohde, you are on deck.

MS. O'CONNOR:

My address is 4905 Apple Wood Circle. I am Katherine O'Connor. Having served for ten years in your position, that is on a planning board, I wanted to compliment this board and this audience. This public hearing has been well run. We have heard no harangues, but mostly facts and figures based upon the DEIS and that's what it should be, but I think you could have been a little

nicer to Ray. I would like to speak about the traffic intersections. The developer has indicated what intersections must be changed for the benefit of the project, but has he approached the D.O.T., that is the State Department of Transportation? When the D.O.T. was contacted, they have received no plans from him, who is going do pay for the changes? The federal government or federal D.O.T. has indicated that the highway trust

fund is very near bankruptcy and has established a new commission, you are going to love this one, SAFETE LU, standing for Safe Accountable Flexible Efficient Transportation Equity Act. You like that? This is a new commission that will determine which state receives what moneys and some of our projects will have to be state funded and state done. The moneys will be decreased going to highway construction that is going on now under old bills. Yes, they do functions -- yes, they do function very well -- sorry. I was going to talk about septic systems. Septic systems do function

very well as two people mentioned last night. However, most of us who live up here have lived with septic fields and tanks and we know the tanks function quite well as long as they are cared for. But if they are improperly cared for and you are going to have a project that's going to be run by management of some sort, if they do not -- if they are not well cared for there can be some

terrible mess. It is the leaching fields that are the important part of this project. Soil is an efficient filter for effluent, that is true. But eventually the water will make its way to the wetlands, streams and the lake. It has no place else to go. The fields are 8.7 acres. I think you should think hard and long about this project. It may put our area on the map, but not necessarily in a positive way. This project is too big for us and I hope you think well about it. Thank you.

MR. PIERRO:

Pat Madiagan, you are on deck.

MR. ROHDE:

Good evening. My name is Karl Rohde, member of the Kent Town Board, but I'm representing myself tonight. Last night there were many good points made on both sides of the issue. I know each of you will weigh the information and arrive at the correct conclusion. I do not envy that task, nor do I want you to assume I know what the correct decision is. What I am asking you is

that when you deliberate, that you are not influenced by the hyperbole that has been evidenced from my town. The fact that our county's executive's son works for Camarda should have no bearing on the decision. There in no proof that his job is contingent on the success of Patterson Crossing. Others in Kent have claimed that Senator Liebel's views are suspect because you named a road in your town after him even though he has not voiced an opinion on the project. The naming of the road is something we should have done for thanking him for getting us our town's beautiful town center as you did for yours. Others mentioned the tragic accident that

happened recently at what will be the main exit of Patterson Crossing. While I have nothing but sympathy for the family, it was not noted that the driver was ninety-one years old and perhaps that had more to do with the accident than the traffic patterns. Further, he failed to stop when coming to the intersection of the exit. Both points

conveniently omitted from yesterday's testimony. Another person at a town board meeting made a nebulous accusation that said a Patterson Crossing-type project was be investigated for corruption according to unidentified or unsubstantiated newspaper articles, articles that the speaker thought may have been in the papers, but did not produce. No one else could recall such articles or investigations. I'm asking you to dismiss such ventless attacks and deal with the facts presented to you. Please do not think that the majority of the people from Kent are like that. The majority are honest and truthful people who have a right to be concerned about their well-being and

the well-being of the town. Do not let those using inflammatory and baseless statements influence you against the true and honest people of Kent. Make a decision based on facts. There's nothing more we can ask of you. Last thing I would like to mention was that I was heartened when a member of your board asked rude members of the audience last

night to have respect for the views of others, a lesson that we might all learn from. Thank you.

MR. PIERRO:

Steve DeLaurentis, you are on deck.

MS. MADIAGAN:

Good evening, I'm Pat Madiagan, Kent Town Board. I'm a citizen, but truly also as a representative of the people that elected us. I brought with me tonight some files that I have on Patterson Crossing and I want you to see the volume. Basically as I stated, among the documents are correspondce by the concerned residents that we, as town board members, have received. Please take into consideration that even though those

numbers may not be very large here tonight, those who are not here still have a voice. Some of these documents are letters and correspondence that we have received from many of our residents. There are many issues in our community, not the least of which are the quality of life concerns already

addressed. Rather than reiterate the previous statements, I'd like to clarify the misconceptions that I have heard from people both pro and con suggesting that Kent would be more accepting of this project if the tax relief sources were coming to Kent residents rather than going to Patterson and Putnam County. This is not the case. Although, as residents, we are concerned about the additional space as first responders because of our proximity to the project and because of the quality of life issues that are of deep concern. The fact of financial reward, whatever that may be, whether small or great depending on who you listen to, depending on what the taxes do for the school system, studies have been done that Highland Falls

for instance, Brewster they have a 7 percent school tax increase, so I don't know where the additional money was supposed to come from the Highland Falls project. Just this past year they had to raise their school taxes.

You have an opportunity as board

members, I don't envy your position. You have a right and obligation to hear all sides. In our town board we have to do that also. One of the concerns that people have expressed here and previously when you first heard and held your public hearing was the proximity to shopping. I know people want to shop. I understand that. These stores are not gaining additional customers. Instead of having the customers drive to Connecticut they will spend their money here. It doesn't behoove the store to spread their money out further. They are not gaining additional customers. I think also there's an opportunity for jobs, for the possibility of people to gather as they do in a shopping mall. This is minimal in comparison to the

impact that it is going to have on our town. I realize that there are other oppositions and I realize there are things and concerns that people have. However, you must take into consideration, why do this at Kent's expense? It is at our expense that the

proximity to additional shopping is going to come. We bear the burden. People from Patterson have said to me they don't understand what the big issue is because many people in Patterson are certainly for this. It is not being built in the Patterson community, ladies and gentlemen, it's being built in the Kent community. That's what you have to take into consideration. Thank you.

MR. PIERRO:

Liz Cafiero, you are on deck.

MR. DELAURENTIS:

Good evening. I'm Steve DeLaurentis, Highview Drive in Carmel. I'd like to begin by expressing my thanks to each and every one of you, I know how hard you work and all the time you give up, your free time to help the community. I do appreciate it. I am a

developer. I've been developing properties for twenty-three years, so I understand where you are, what you are going through right now. I can take this environmental impact statement and go through it and probably find problems and help you out and write things

down, but you have a lot of consultants, people who are much, much more knowledgeable than I am, so I'm sure you are getting the right information. I think what you have to come to grips with, and you are planners, is whether or not this is a good plan. When I'm working and I'm working on a plan that I know is good, it's exciting, it's very exciting. But this isn't exciting. There's no equity in this plan. Too many people are going to be hurt. I'm fortunate. My son is out of school, college, my wife has a good job, I have a good job. If the impact is so burdensome, I can move. But there are so many people that just can't move. They have saved up half their lives, work hard and they can't go anywhere. They are stuck. The burden is going to be tough. It's just not a

good plan. So when you look at it, I would like you to keep that in mind, keep in mind all the hard working people that are stuck here, that they can't leave and have to deal with this. That's it. Thank you.

MR. PIERRO:

Veronica Popovics, you are on deck.

MS. CAFIERO:

My name is Liz Cafiero. I live at 98 Concord Road. My property is on -- both sides of my property are going to be abutting this mall. I expressed concern about the fact that for years there was a pond on that property. That pond can be viewed, if you go online. A couple years ago on Google if you put in a couple different addresses you can see that there was a pond on that property. Apparently that water course has been diverted. I understand it's no longer there. I was on the property looking for my cat who was stuck in a tree and I didn't see that pond. I happened to note that I don't see on the DEIS there was a vernal pond on the on ramp of exit 18 on the highway right as you

are about to get on 84, there's a pond there. I don't see that on the plan. I was wondering where that water goes under the highway towards the camp to the Great Swamp and how that is going to impact on the

environment because it doesn't seem to be on the plan, unless I missed it. I have notified the D.E.P. about that. I was wondering if the State Department of Transportation realized the impact that pond will have on 84. Where did that pond come from? Aside from all my other concerns about the environment and quality of life and my property value and my neighbors property values and their quality of life being compromised by this mall. Thank you.

MR. PIERRO:

Guido Garbarino, you are on deck.

MS. POPOVICS:

My name is Veronica Popovics. I'm a property owner and Patterson taxpayer that resides at 50 Concord Road. My property connects with the upper gated emergency egress for the proposed Patterson Crossing.

I'm presenting to you three very significant environmentally related afflictions that the predevelopment stage of the Patterson Crossing have already caused me personally,

and which are not particularly addressed in the Draft Environmental Impact Statement from my exposure to it.

I purchased my home in April 2004 with a new well completed on the property one year prior. No water problems occurred at my home until April 2005. At 11:30 in the morning on Friday, April 29th, 2005, I was roused by the rumbling and screeching of a large machinery trailer labeled AJR Site Development which was trying to round the corner of Echo Road onto Concord Road over the corner of my neighbor, Steve Hill's, front lawn to pass in front of my home. The trailer was carrying a labeled twelve-ton backhoe through to the adjoining property entrance gate. As I, or any of my neighbors, can report from attending previous Patterson Crossing meetings, developer Paul Camarda had reassured that this area would not be used

for heavy trucks and machinery. This was not the first machinery at this site, but certainly the most largest and heaviest. At 7:30 a.m. on Monday, May 2nd, 2005, I was

awakened by loud, repetitive banging and grinding of machinery while listening to the vibration of my windows. I went to the young engineer on site who explained to me that he was overseeing a boring company who was drilling test holes with monitors in very close proximity to my home. The relentless banging on the adjacent property continued daily at 7:30 a.m. throughout the entire course of the week. This container holds the contents of the sediment found in my indoor home well, water filter cylinder at the end of the week of the hole boring (indicating). Prior to this, my filter required changing once every three months. A new well built in 2003. I question who and what monitors specifically will be in place for my well during the more traumatic dynamite blasting of the bedrock on this adjoining property for the proposed Patterson Crossing project?

Secondly, these are photographs that I had taken of the roadway into the same gated area as a result of the heavy machinery truck

traffic over an approximate two-month period. Their roadway was directly in front of my house and underwent this crumbling and cracking. I have before and after photos. During heavy rains, water would pocket and further erode and destroy the road and wash the erosion down my driveway to pocket and pool at the base of the foundation of my home. I used these photographs during the the May 25th, 2005 Patterson tax grievance meeting to show the newly existing -- my brick walkway was eroded and the foundation of my home was saturated causing repeated water seepage into the crawl space beneath my home. The repair of the roadway ironically was not done by the Patterson Highway Department, but rather with the much appreciated help from the Kent Highway Department that repaved the road in July 2005. My (inaudible) of the Patterson Highway Department resulted only in a

conversation with the receptionist Margo, she gave me his calling card. I was put off for two weeks because of Mr. Williams'

unavailability and was ultimately told to seek help at the Kent Highway Department because they performed snow removal for this strip of Concord Road. Just in the predevelopment stage of Patterson Crossing I've been subjected to disruption of sleep schedule and been denied my rights to peace and quiet at my home. I live in close proximity to the rock blasting and dynamite and I have to suffer the consequence from a crumbling roadway including time, use and effort in pursuit to a resolution of a problem I did not create.

In closing, I sincerely urge each one of you who sit on this board to take into consideration what I have already experienced for the sake of retail development planning. I ask that each of you put yourself in the place of any community member who comes before you to express concern about how this development will impact upon their safety and

quality of life. This mega-development is too large a scale for this concentrated

community. Comments and pictures will be submitted.

MR. PIERRO:

Christina Fatum, you are on deck.

MR. GARBARINO:

My name is Guido Garbarino. I live at 14 Fleetwood Road. I'm here to comment in general on the proposal for Patterson Crossing. I grew up in Lake Carmel. I lived here for twenty-six years and have chosen to start my family here. I think people choose a community like Kent or a community like Patterson because of the character of the community. People make tremendous investment in their property because they feel that they have a stake in the character of that community that will maintain their property values both in terms of monetary and aesthetic value. I look at this and make an analogy between the neighbors of the Town of Kent and Town of Patterson where if I wanted to build a shed or garage on my property I

to respect and I have to respect my neighbors' right in building such a structure. I feel this proposal is infringing upon the Town of Kent as if my neighbor were to build an addition on his house that directly encroached on my property without the proper variance. I would like for you to consider that neighborly dynamic. When I was in high school there was a proposal for a dump in the Town of Patterson. The residents of the county opposed that almost universally and I would ask the residents of Patterson to extend the same courtesy to the residents of the Town of Kent given this situation.

In terms of the tax benefits that are supposed to result from this project, I'd like to point out that the approximate $750,000 per year that this would generate is less than 1 percent of the annual budget of the Carmel schools. It's a drop in the bucket. For such a small percentage of the

for the character (inaudible). We have quiet neighborhoods, we know our neighbors, we feel safe about the kids playing outside, and with unknown people coming off the interstate at all hours of the night to come to this place makes me feel less secure in the investment that I made in living here.

MR. PIERRO:

AnnMarie Baisley, you are on deck.

MS. FATUM:

My name is Christina Fatum. I only lived in Lake Carmel for the last four years. My husband is a police officer for New York City and he works in the Bronx. We had a large choice of areas that we could have moved to, Long Island being one of them, where my family had decided to move to. We chose not to move to Long Island because of the congestion, traffic, overcommercialization of the properties there, the strip malls every other light. If anyone knows what Sunrise Highway looks like, it's a mess. I don't want to see 311 start

familiar with Queens Boulevard which is northern Queens and big malls, small malls, stores of all kinds. When we decided to move to Putnam County, it was a great commute from for husband to go to the Bronx. He takes 684 to 84. The conditions of the roads that he drives on could be hairy and the trucks that come down off of 84 down 311 to 52 where I live, if there is ever an accident on 84, it's dead stop traffic. My son's buses have been delayed for long periods of time and school is only three miles up the road. So the traffic can be horrendous when there's a problem on 84. As far as widening the roads and putting in turn lanes and lights, I really don't see how that would help with the amount of traffic flow that we are looking at. Safety for our school buses is a big issue for me. I know that a gentleman had been interviewed and spoke from the school bus department saying we have replaced our buses, and our budget is so high for the cost of our buses, not from the buses breaking

down, but from the buses being hit and sideswiped. I find it unbelievable that we would opt to add more traffic to the small community. We have, when we were moving up here, noticed that there was great shopping, only one exit away. We had looked into Mahopac, we looked into Carmel itself. All too congested for us. We liked that we could just travel down to Putnam Valley which is still Putnam for shopping. You could go over to Southeast which is still shopping. If I wanted to be at a store like this, I would have moved to Long Island taking my 350 plus mortgage with me and my taxes with me. My taxes are almost the same. I wanted country, I wanted clean living. I want to know my septic systems are not in danger, the drinking water is not in danger, the lake that I come to love and that my children swim in is going to remain clean and we are not going to hear honking trucks over the summer, we like that we are living in the country. This is the beginning of the country. We want to keep it country.

As far as the septics are concerned, the septic fields on this property, and I don't know a lot about septics, but when you are building a septic and you put a shovel in the ground and you hit rock, that's not going to absorb water. A lot of this property that we are looking at is rock and clay which doesn't absorb water either. We have a rule, when replacing a septic system on one's property the field must be 100 feet uphill from a well or 200 feet downhill. You also need space for the primary field and 100 percent reserve. You need twice as much space available. Eight football fields now have to be sixteen football fields. I'd like to know what the Department of Health says about this project and the size of the septic fields as I am looking at it here? Is there a contingency for the septic field? Does this also fall into twice the size planning that the Department of Health states is necessary? The zoning laws were changed and that kind of threw me a little bit. I don't know much about politics up here because I

haven't been here very long, but I'm looking into it. I'd be afraid that a project of this size with some zoning laws having been been changed would just open up the doorway for other large projects that could come through. Another developer could come in and say you changed it once before, why can't you change it now. It's not that I don't want to see a community grow. I would love to see the community grow.

MS. DiSALVO:

Thank you. Your time is up.

MR. PIERRO:

Harold Schaefer, you are on deck.

MS. BAISLEY:

My name is AnnMarie Baisley. I live at 42 Lockwood Road. Septic systems study that was addressed in the DEIS was done in 1996. At that time they claimed that a lot of pollution into the lake was caused by septic tanks. Lake Carmel Park District residents paid hundreds of thousands of dollars in remediation and further studies. It was found that a lot of the contamination was

caused by road run off. Just a few months ago the county did a major project on Terry Hill Road because of all the run off on Terry Hill which happens to be a county road. In 1980, there was an area in Lake Carmel that had contaminated wells. At that time there was a study done on the aquifers. It turned out that some of the aquifers went as far as the Patterson dump. Some were traced to their sources being by the Our Lady of the Lake Church, some by Kesmer's Farm and I didn't see anything in the DEIS where this study which was eventually submitted to the county was even looked at as far as the aquifers that are going to be affected by the amount of water that could be used by this project. Based on anybody that studies aquifers, when this first came about I had to think back to 3rd grade where we were taught about all the different rock levels, and I said that's what they are talking about. It's amazing how many miles -- my neighbor across the road from me, their water comes from Patterson, my water comes locally. If a

study is done on people's water sources just within a couple hundred feet area, that doesn't mean that people a mile, two miles away are not going to be affected once these wells are drilled. I think that the study should be further looked into. I won't tell you how many years I've lived here, but 684 wasn't built and my husband worked in New York City. I've seen a lot of changes, positive changes. I have a dirt road and now I have a paved road. My closest neighbor was two miles away and now I have neighbors all over the place, I love it. As far as doing a new construction project like this, I still like the quietness and fortunately I can't hear 684 from where I live and I want to keep it that way. And I don't mind paying increased taxes. When I first moved here, our total tax for school, county was $500. You know it's nowhere near that now. Of course, salaries have gone up. Look at the aquifers that are not addressed sufficiently in the DEIS. Thank you.

MR. PIERRO:

Mary Rinzivillo, you are on deck.

MR. SCHAEFER:

I am Harold Schaefer. I have lived in the Kent area since 1945. I don't appreciate any of this nonsense. You guys have introduced a parcel on the west side of the highway. I want it back on the east side, stay over on that side and maybe go a quarter of a mile or half a mile down the road with the goddamn project or go to Billy Foster andput it in that area next to Home Depot or right down the road from them instead of here. All we are going to get is a bunch of noise and we got plenty of noise from the highway and from all the impatient people that have come up. You guys are in trouble taxwise because you spent too much. You like to binge and no accountability. You build buildings and stuff that's not really necessary and because of that we have a problem. The people are being pushed out. So maybe that's what you want, you want to have a big mall and no people? I wish you luck. I said enough.

MR. PIERRO:

Steve Hill, you are on deck.

MS. RINZIVILLO:

Mary Rinzivillo, I live at 80 Somerset Drive in Patterson. First of all, don't let the numbers here fool you for supporters of Patterson Crossing. There are thousands of people here. Tonight and last night was curriculum night at the school and there are many people that wish they could be here so they could express their views and hopefully you can schedule another one of these some time in the future. Second of all, I think it's very important that we bring in something like this. We need to keep our tax dollars here instead of sending them off to Danbury, Fishkill, Westchester. I understand people have concerns about their properties being damaged or values going down, but you guys are a very responsible board and we know that you will do the right thing for everybody involved. I'm hoping that you guys will do the right thing and say yes. Thank you.

MR. HILL:

My name is Steve Hill. I live at 77 Echo Road in Carmel. My property is adjacent also. I live across the street from Veronica who had spoken before. The entranceway for this so-called emergency exit is in my backyard. So I know a little bit of history about what has been going on back there, a little bit of history of Mr. Camarda, he's been to my house. He's told me on occasion that the so-called septic field now that is in my backyard, by the way, he said six months ago maybe we will make it a ball field. It went from a ball field to a septic field in six months. This is in my backyard. Not in anybody else's backyard. I'm sure there are other people. This is in my backyard. I'm going to look at a Costco on my deck from my porch. Just visualize, you people in your home walking out on your back deck and looking at a Costco, that's what is going to be in my backyard. I know a little bit about septic tank? I worked for the New York City Police Department. I also have a

been plumber for twenty-seven years. And you can't tell me a septic tank in a residential home does work, and anybody knows that has a septic tank, it's regulated. I don't throw bacon fat, I don't throw oils, I watch it and make sure its regulated. You can't tell me some kid working at Lowe's is not going to be dumping muriatic acid or some pesticide into (inaudible) going into a leach field and septic tank behind my home which coincidentally -- all along Vernon, you can come to my house and see, my well is exactly fifty feet from where he wants to put this septic tank. Fifty feet. Not only my well, but twenty other homes along Vernon. Not down Concord, down Vernon. Everyone's wells is within fifty feet of this guy's septic tank. You can't tell me that a septic tank is going to clarify pesticides and poison. This is where we live. That water we eat with, we clean with, my kids wash with that water. It's not even debatable. It's not -- it's mind-boggling how this man can come in here. This is human life. I love animals, I

love trees, but we are talking about human life here. Our quality of life. Not some bird, not some tree, not some rabbit. It's people that are going to be affected by this. Our homes. I'm not rich. I don't have a lot of money. I'm a blue collar worker. This guy's got money, God bless him. He's rich, I'm not. My home is my investment. This is about people and our lives. This is not about taxes and all this other mumbo jumbo. This is our lives. It's in your hands. This is in your hands. You are going to literally destroy people's quality of life and our homes, our way of living and we know it. I have a backyard with a deck and a pool and I have a daughter who is sixteen years old. I have a twelve-year-old son. They are in the backyard every day in my pool on my deck. He's going to scrape the place, take trees down. He has an answer for everything, Paul Camarada. He has a rebuttal for everything. Whatever issue you are talking about he has someone to rebut it. You can't tell me 1,200 cars, 2,000 cars every day that pull into the

parking lot and look at my daughter in the backyard with all the perverts and pedophiles and every other low life looking in my backyard and at my family, this is the thing that -- these are the consequences that we are going to suffer. So please take into consideration it's not about taxes, it's not about animals -- I do love animals and the environment, but this is about our lives. Please take that into consideration. You are going to be destroying a lot of people's lives. Don't let this guy line his pockets on our backs. Please.

MR. PIERRO:

Karen Carrell. Chris Kubie, you are on deck.

MS. CARRELL:

Good evening. I'm Karen Carrell, resident of Patterson. I can't match that. The following contains technical comments on the July 27, 2006 version of the Patterson Crossing Retail Center Draft Environmental Impact Statement. The items listed in order of appearance in the document, not in order

of importance. First page 31, paragraph on existing tax revenues states annual property taxes currently generated by the project site are 56,735. This figure is not supported by the data in both tables 32 and 33. This figure needs to be corrected or additional data supporting this figure should be applied. Page 3-1, first paragraph of section 3.1.1 makes several statements and cites a newspaper article on a proposed budget speech as its source. The statement should be replaced with actual primary source data or removed altogether. On page 3-2, the total combined property and school tax figure has been incorrectly summed. The correct value assuming the rest of the data is valid should be 35,492 as seen in table 3-3. Page 3-2, existing comps and services paragraph contains the existing cellular communication towers on site administration of facts ensuring emergency services access to the tower. The developer should provide the actual figures for these costs so that the minimum claims can be verified. 3-3, second

sentence, currently Putnam County generates significantly lower county tax revenue per capita through its sale tax than other counties in New York. It's pure commentary and is not (inaudible). The state comptroller's report on sales tax dated March 2006, there are only sixteen counties that have higher sales tax revenues per capita and all of them are within a factor of 2 within Putnam County. Further, Putnam County sales tax per capita are significantly above the state median. On page 3-4, there's a second paragraph that contains the substantial increases in commercial ratable would also come with no increase in resident population or the number of public school students. The developer must provide the data to substantiate this claim. On page 3-3, the amount of state aid that a school district receives is related to the total value of the property within the district. The higher total value, the lower the state aid amount. It is a complicated formula, but this is the basic principal. Malls such as Patterson

Crossing really raise the total assessed property value. There may be a 579,000 contribution from the mall to the school district, the state aid portion will go down as a result. The DEIS should include an estimate of state aid reduction and adjust the predicted benefits accordingly. On page 3-4, the bottom of the page lists the sale tax rates for state, county and MPTD. The 4 percent state rate needs to be modified to point out the exception (inaudible) that went into effect on April 2006. 3-4 and 3-5, Dutchess County has offered to participate on sales tax on clothing. The DEIS needs to comment on the effect of this change in the tax code given the proximity to Dutchess County. In paragraph 3-5, first paragraph, most probably spending much larger amounts on these goods than other counties including Westchester and Dutchess. This is pure speculation and should be removed from the document or substantiated with data. Page 3-6, table 3-5, all the data is for the towns of Dutchess County only. The DEIS should

include the data for towns in Putnam County or statewide Dutchess data is relevant. The date of the source of the data in table 3-5 should be provided. The rest will be in written comment. I was up at the Highlands not too long ago and talking about septics, it stunk. I couldn't believe the people weren't wearing gas masks and it was raining so hard and the septic was obviously not working and this is going to be an open septic field and it's going to stink.

MR. PIERRO:

Jerry Furey, you are on deck.

MR. KUBIE:

I'm Chris Kubie from Patterson, resident of twenty-four years. This is a continuation of page 3-6, second paragraph. A portion of the tax revenues collected by Patterson and Kent should be used by the local highway department and maintenance of local roads. According to table 3-3, towns will get 110K and 7K respectfully. If these amounts are correct and devoted solely to road improvements, they will not amount to

much. The amount that Kent receives would not pay to stripe a line on a single stretch of road. The impact of the town roads will not be mitigated by the miniscule amounts listed here. The DEIS needs to be revised and properly account for the impact of the town roads and where the funding to mitigate these impacts is coming from. Page 3-7, second paragraph, lays down the costs of fire services and states that there will be no direct cost to the towns. Further states that the project will contribute 27K and 1K to the towns respectively. The developer needs to show the cost of a typical fire call to Patterson Crossing by each town and then -- page 3-8. I'm sorry. I think that about covers it. I'd like to add that something I don't hear very much of is liability issues with watershed. I hope this is investigated further and I hope this is going under your considerations. What we don't need are lawsuits. We need to look at the environmental impact, even if you don't care about the environment or the water we

drink, but everything is about liability today. Thank you.

MR. FUREY:

My name is Jerry Furey. I live at 14 Fairfield Road in Lake Carmel. First, I'm so glad to see generations of people here tonight and last night, because this is goverment at its best. This is what makes America pretty special. Not politics, government. If we think of Thomas Jefferson, it goes back to the idea of the individual and community. Communities are made of individuals who think for themselves, by themselves. They make the community by sharing with one another the ideal of the common good. You can be a member of several communities. Your church, the state, housing development, town, voting district, whatever the case may be. To be a member of a community requires respect and participation. This concept goes into thinking and acting responsibly. One way to do so is by voting. The other is to come to meetings like this. I passed out a copy of a map of District 5

because we have been hearing last night and tonight about the Patterson community, the Kent community and the Carmel community. Patterson Crossing is going to land in, if it comes, in Putnam County legislative District 5. If we look at the map, we see it's the edge of Patterson. It's the lower edge of Kent. It's the upper edge of Carmel. These are places that were carved out for some reason fifteen or so years ago. You wonder why it was made this way. There is no revenue sharing in this county. So why would you make a district out of parts of three towns? We begin to see where that is? Patterson Crossing will go right in between Kent and Patterson in District 5. District 5 was carved out because it's the tail end of three towns. It's the part of towns where people generally seem to think for themselves, to have ideas, to share in ways that may be different from the rest of their particular town. Maybe they are considered the coo-coo bananas. For years, if you look,

I live in Patterson, who cares about Carmel?

And in Carmel, who cares about Kent? You have this legislative community that's disenfranchised. That any legislative deal that affects their town they have nothing to do with because it's not their district. This is something that I think has finally brought District 5 alive. That there is a community here made up of people from Carmel, from Kent, from Patterson that are saying wait a minute, there's a reality here that we can't dodge anymore. I think that it's the responsibility of all of us in District 5, in Patterson, in Kent and in Carmel to watch over this community and be careful that the criteria of the community is not subjectively brought, but beneficial to all of us. And it's interesting, I'm a high school teacher and we are reading Ibsen's, An Enemy of the People. There is a line in there, if you attack the government you don't do the community any harm anyway. Those fellows don't pay no attention to it anyway. He's talking about big government. They go on

just as they are in spite of the community.

Local authorities are different. They can be turned to and they can turn out. That's what we need to be here, to let the people who are going to make decisions that affects our community understand. Tocqueville said it best, 1834. These Americans are the most peculiar people in the world. You will not believe it when I tell you how they behave. In a local community of their country a citizen may conceive some need that is not being met. Baking cookies for signs, asking people to trust their hearts. What does he do? He goes across the street to discuss it with his neighbor and then what happens? A committee begins to function on behalf of that need. All this is done by private citizens on their own initiative. The health of a democratic society may be measured by a quality of function performed by private citizens. I think that's what you are listening to. Thank you.

MR. PIERRO:

Ladies and gentlemen, thank you for your cooperation. We will take a ten-minute break.

(SHORT RECESS TAKEN)

MR. PIERRO:

Rebecca Rabinowitz. Elana Bao, you are on deck.

MS. RABINOWITZ:

I just put together these notes. It's going to be a little scattered. I'm a resident of Patterson on Ice Pond Road. I also own property on Ice Pond Road in the Town of Southeast. Pretty much the way I live now, I'm about under two miles from the Highlands, so I have firsthand life experience next to a large shopping center with a box store. First thing to mention, of course, is the bogus tax relief. There is no tax relief. You put in the Highlands, you cut down hundreds of thousands of trees, destroy the view from all the residential roads in the neighborhood because the

Highlands is on a hill and there's no tax relief, so that was the promise from the town

and county. So we got convenient shopping from Home Depot, but it's not reflected in our taxes and I watched every year and, of course, the taxes have gone up and up and up parallel to what my taxes have been in my property in Patterson. Why hasn't one been less than the other? Why should I have tax relief when I have all this other kind of retail and other tax coming in? From my perspective that's a falsehood. Number two is the terrible closeness of this gigantic shopping center next to a residential neighborhood. I feel terrible for everyone that lives near there. You cut down all the trees between 84 and your house and you are going to hear it. That's what happened to me. (inaudible) which was across the street from the Highlands is now cutting down trees and suddenly the natural buffer you took for granted from 84 was lessened. Over the few years of development 84 has increased. My

way of life has definitely been hurt. And I can see that happening again right here with this gigantic center being built. It's

supersized. You have to see it in perspective to how we live and where we live and why we want to live here. Thank you.

MS. BAO:

I'm Elana Bao. I am a resident of the Town of Kent. I'm actually a native resident. I was born and raised here. This community is still close to my heart. We love it for the character, its beauty and serenity and for the wonderful people that live here. I wasn't planning on speaking tonight because I planned on submitting extensive written comments, but in light of the support for Patterson Crossing that I heard here tonight based on the alleged tax relief, I felt that it would be remiss of me not coming up here and sharing my findings regarding the economics of the Patterson Crossing project. My review of the DEIS indicates it is grossly deficient in terms of the economic data that was presented. He,

Mr. Camarda, doesn't even meet the minimum requirement for an economic analysis. He presents sales tax figures -- retail revenue

that is completely unsubstantiated. He doesn't outline any methodology for how the figures are arrived at. There is no cost analysis for this project. He refuses to even acknowledge in this DEIS that this development will have any cost. This is completely inappropriate for a project of this scale and magnitude. We know it's going to cost us and we deserve to know just how much it is going to cost us. We know that it is going to raise the crime rates. We need to know how much additional police we will need. We need to know the cost of those additional resources. We know that this project requires extensive traffic modifications. We know that is going to cost us millions of dollars. We need to know exactly how much. It is completely inappropriate for these figures to be left out of this DEIS. SEQRA requires that a

project's level of detail be directly proportional to the scale and magnitude of the project. This DEIS fails miserably. This project should be denied outright based

on the information that is in this DEIS. If you choose to even consider this as viable project, you do need to compel the developer to provide a supplemental economic impact statement. We are a county in fiscal crisis. It would be fiscally imprudent of this board to approve this project without compelling the developer to submit appropriate economic data in support of his alleged tax relief. Just some of my general observations. I'm going to leave it at that. Some of my general observations regarding this DEIS is that it is written from a very extremely biased perspective. It includes false data. It is full of faulty logic. There are unacceptable generalizations and assumptions. It alleges projects that have failed to provide any conclusive data to support the alleged benefits. Most importantly, this DEIS minimizes every single negative impact

in the most negligent and unacceptable fashion. This project is completely out of scale, completely out of character. It's in the wrong location and for this developer to

propose this project, to have the audacity to propose a project so grossly inappropriate for this location is just beyond me. The project should be denied outright and it shouldn't even be considered.

MR. PIERRO:

Christopher Kanuk, you are on deck.

MR. SHEARWOOD:

My name is James Shearwood. I live in Kent, about as far west in Kent as you can be. I have two points to make. I preface this: I like driving to Patterson. When I visit friends in Connecticut, I drive through Patterson to get to Connecticut. In looking at the DEIS, I realize a lot of the people who come to this center are going to drive through Patterson to get there. If they come from Connecticut, if they come from Route 22. The solution to that problem as written up in

the DEIS is that to lessen -- there is on 4.8.47, to lessen the traffic on 311, he proposes lights which will push the traffic down onto the side streets so that Patterson will have a large traffic problem, if that

center exists. It is something you might want to consider in order to keep the town as pleasant as it is now. The other point, it's on a larger scheme of things, in looking at the plan, it would seem that this is a proposal that would have fit in 1969, a shopping center built that you could only get to by a car. Even the people that live 150 feet from the shopping center will have to get into their car and drive a mile or two to enter the center. At this time when it's questionable whether we are going to have gasoline in a few years, or if we are going to have it, it's going to be at $5 or $6 a gallon, it would seem to me that wise planning would encourage developers to build things within central corridors, like within a village like Patterson that has a train station and where people can walk to things.

Building a center on the outskirts of town that can only be driven in to may mean that the developer goes bankrupt before it's completed. Should that happen, if people can't drive to it, you will have not only no

tax breaks, but something that will cost millions of dollars to take down. Even though it isn't your responsibility to make sure developers make the best decisions, in fact, you could say it's his idea, let him go bankrupt, but it would be wise to consider the whole community at this point and is this the best thing to be built at this point in our history? Obviously, I think not. Thank you.

MR. PIERRO:

Betty Hammond, you're on deck.

MR. KANUK:

My name is Chris Kanuk. I lived in the lake district basically my whole life. My mother's back road was dirt, now it's paved. I moved maybe a mile from her house. I live on the same hill proposed for this shopping

center. I can hear 84 now with the trees. What happens when the trees are gone? I live one block away from Echo Road which is your emergency egress/alternate exit/entrance. I think it's ridiculous to put it next to a park district. This is a box store, lights,

cut down trees, traffic, it's proposterous. I don't like it, I'm not for it. Everything I heard tonight is negative, nobody wants it. So why are we even talking about this? Squash it, get rid of it. I've heard maybe two people that want it. 95 percent of the people don't want it. Obviously you got your answer. Taxes don't go down, they never have, they always go up. I don't think we need this. I can travel one exit on 84 and go to Home Depot and all the other stores they put in there. I don't want that in my backyard. I live less than a quarter mile from it. Thank you.

MR. PIERRO:

Kathleen McManus, you are on deck.

MS. HAMMOND:

Betty Hammond. I'm also on the Lake

Carmel Advisory Committee. I have a question for James. What side street is it going to divert traffic to? Where are they going to go? Up the back road. I don't know where he wants these guys to go. Where are they going to go in your town? Where are they going to

go? Nowhere. Straight down 311. Anyway, I came up here to make a statement about the water of Lake Carmel which I heard was horrible. It has been horrible for some years. We have spent thousands of dollars. Thousands of dollars to take a look at the water, to protect the land around the water, to protect the water coming into the lake, to clean up the weeds, to make sure that the water quality is not only potable for New York, because we kind of don't like those numbers, but better than that. So can we be affirmed, can we be guaranteed that the water will definitely go down the other side of the mountain? That our drinking water is going to stay safe, that our lake water is going to stay safe, that our environment is going to

remain the same? Can you guarantee that? No. Thank you.

MS. McMANUS:

My name is Kathleen McManus. I live at 84 Concord Road, the crossroad is Walden Road. The project is approximately sixty-five feet from the back of my house. The one

thing I would like to address right off the bat is water testing. In the DEIS the developer states that thirty-nine neighbors were surveyed to participate in testing of private wells. Thirteen positive responses were received and that eight private wells were tested. That is incorrect. At least nine were tested because I was one of them and I'm not included in the DEIS. I'm disappointed to see on the DEIS that out of eight homes on Concord Road, that only one home is shown to have been tested and that is of my neighbor, who at the time of the testing is 101 years old. She is now approaching her 103rd birthday. How much water could a 101 woman use in January, maybe two glasses of water and a pot to cook in.

And I don't say that jokingly. So I question why the water results from monitoring my well were not included on the DEIS. I have to say that makes me question everything said in the DEIS. If this information is missing, then what else is missing or being misrepresented? I don't say that lightly. Additionally, the

water tests were done in January. The probe was in my well, I believe for at least ten days to two weeks. The DEIS reflects that tests were done for four days. I questioned why water tests were not done six months later at an optimum time, say July or August, when water usage at a home, particular mine that has five people in it was not done. As you know, in the summer kids are home so there's more water usage. Someone is home all day, more laundry, more showers, watering the lawn, pools, power washing, you name it. In the winter as a footnote, if it's snowing or icy, my water usage is at a minimum because my washer and dryer are in my basement, I can't access my basement from

inside my house. I have to physically walk outside the front door and around the back and into the basement. If I have eighteen inches of snow I don't do laundry at home. I think water tests in January grossly misrepresent water usage by any family in Concord, particularly of a single resident and particularly of my neighbor. I will be

submitting comments in writing addressing a lot of other concerns. I did want to highlight the fact that the access road is within sixty-five feet of my children's bedroom window. I am an asthmatic. Two of my children are mild asthmatics. I need three inhalers to breathe every day. My husband just came home yesterday from being in the hospital for congestive heart failure, so I apologize. I'm emotional. I do expect within ten years I'll have one, if not more than one aging parent living with me. I feel that the board and community have a responsibility to address the health and well-being of its residents and a project of this magnitude and use the part of the

pollution and exhaust and dust that not just comes from construction, but ongoing use certainly is not contributing to the well-being of my family or my neighbors.

Just two more quick points. Until recently, my husband was the site manager of the Brewster Town Center which is located at Route 311 at 22 for over nine years. I know

from personal experience the elements and activities that happen after hours. Everything from teenageers spinning cars, crashing them through plate glass windows of stores, getting calls in the middle of the night about bad activities. It's not hearsay when people say things happen overnight. I also know about snow removal and maintenance going on all night long from my husband having to be there. I have a concern with that noise being so close to my family and the salt and sand getting into my wells. I will address that more in the written comments.

The last thing I would like to address

is to formally request the board to seriously consider giving people an extension to further review the DEIS. The timing of it coming out in August, a lot of people were on vacation. From a personal standpoint, I had gone on vacation, took a daughter to college. My husband went in the hospital. You are getting kids ready for back to school and now corporate tax returns are due September 15th.

Life gets in the way. You juggle your priorities and the developer's DEIS on some days this week were not with it. Sad to say I took the DEIS with me on vacation, but the size of this project and magnitude and impact it is going to have on the residential community, in particularly those on Concord Road and Vernon Drive, really warrants a lot more time.

MS. DiSALVO:

Thank you. Your time is up.

MR. PIERRO:

Devin Brown.

MR. BROWN:

Devin Brown, good evening. I just

would like to say a little bit about the traffic here. I have been living in Carmel for six years, but as the volume of traffic on the New York State Route 311 southbound approaches the intersection, the ramp is expected past New York State Route 311 traffic, traveling in Patterson -- excuse me. As the volume of traffic on the ramp was expected to increase faster than the New York

State Route 311 traffic, traveling from Patterson capacity on New York State Route 311 will need to be reduced to compensate for increase of ramp volumes. The proposal of adding a traffic signal on Route 311 to shift capacity from New York State Route 311 to the side streets, the increased capacity for the minor street permits, the minor street traffic to enter New York State Route 311 more easily. I would like to personally acknowledge that the claims of the Draft Environmental Impact Statement are that there are no pedestrian traffic and there are no pedestrian designations in there surrounding

the proposed site. Perhaps in the commercial designations there are few in the area, but the proposed commercial center is within a quarter mile of Lake Carmel, and I'm not sure what has been done, but there are hundreds of children walking to this lake every day. In the winter for ice skating and in the summer obviously for the lake itself, but also the Carmel High School track team runs throughout Carmel's streets throughout the spring and

fall, I believe, so that is quite a large percentage of student body in Carmel High School. So I'm a little less than convinced that pedestrian traffic is so nonexistent in the area. But after this project, pedestrian traffic will be completely impossible. Thank you.

MR. PIERRO:

Rich, is there anyone else? In that regard, I make a motion we close the public here?

MR. MONTESANO:

I'll second.

MS. DISALVO:

All in favor?

(Board in favor)

MR. PIERRO:

Ladies and gentlemen, thank you for your respect for your neighbors and being a part of this process.

MR. MONTESANO:

We have one issue that we are going to discuss as a board and that's the request for the thirty-day extension which has been

requested not only by many speakers, but formally by the Kent Planning Board. In that regard, in reference to the Patterson Crossing proposal, I'll make the motion that the planning board grants a thirty-day extension to the time frame for the allowance of written comments on this project.

MR. PIERRO:

Roll call vote? Second.

MS. DISALVO:

You want a roll call vote?

MR. PIERRO:

Yes, sir.

MS. DISALVO:

Be my guest. Start with you, David.

MS. BRICHTA:

Mr. Pierro?

MR. PIERRO:

Yes.

MS. BRICHTA:

Mr. Rogan?

MR. ROGAN:

Yes.

MS. BRICHTA:

Mrs. DiSalvo?

MS. DiSALVO:

No.

MS. BRICHTA:

Mr. Montesano?

MR. MONTESANO:

No.

MR. PIERRO:

That means the written comment period will remain at September 25th. September 25th. What is it currently?

MS. DISALVO:

September 25th.

MR. PIERRO:

Make a motion to adjourn the meeting?

MR. MONTESANO:

Second.

MS. DISALVO:

All in favor?

(Board in favor)

STATE OF NEW YORK)
) ss:
COUNTY OF ORANGE)

I, PATRICK M. DeGIORGIO, a Shorthand Reporter and Notary Public within and for the State of New York, do hereby certify that the foregoing is a true and accurate record of the minutes having been stenographically recorded by me and transcribed under my supervision to the best of my knowledge and

belief.

X_____

PATRICK M. DeGIORGIO

Dated: September 30, 2006

Appendix D

GROUNDWATER ANALYTICAL RESULTS

ANALYTICAL REPORT

JOB NUMBER: 244322

Prepared For:

Tim Miller Associates, Inc.
10 NORTH STREET
COLD SPRING, NY 10516

Attention: Jon Dahlgren

Date: 05/18/2007

Debra Rohl
Signature

5/18/07
Date

Name: Debra R. Rohl

Title: Report Production Supervisor

E-Mail: drohl@stl-inc.com

315 Fullerton Avenue
Newburgh, NY 12550

PHONE: (845) 562-0890
FAX..: (845) 562-0841

SAMPLE INFORMATION
Date: 05/18/2007

Job Number.: 244322
Customer...: Tim Miller Associates, Inc.
Attn.....: Jon Dahlgren

Project Number.....: 20000586
Customer Project ID....: PATTERSON CROSSING
Project Description....:

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
244322-1	SE Well	Pot. Water	01/12/2005	09:30	01/12/2005	11:10
244322-2	NW Well	Pot. Water	01/12/2005	10:00	01/12/2005	11:10

LABORATORY TEST RESULTS

Job Number: 244322 Date: 05/18/2007

CUSTOMER: Tim Miller Associates, Inc. PROJECT: PATTERSON CROSSING ATTN: Jon Dahlgren

Customer Sample ID: SE Well
Date Sampled.....: 01/12/2005
Time Sampled.....: 09:30
Sample Matrix.....: Pot. Water

Laboratory Sample ID: 244322-1
Date Received.....: 01/12/2005
Time Received.....: 11:10

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	ANALYZED	TECH
SM18 9223	Coliform, Total	Absent			POS/NEG	/100ml	01/12/05	mwr
SM18 9223	E. Coliform	Absent			POS/NEG	/100ml	01/12/05	mwr
EPA 180.1	Turbidity Assessment - Metals	Negative				Pos/Neg	01/14/05	mwr
EPA 245.1	Mercury (Hg)	0.20	U		0.20	ug/L	01/14/05	lms
EPA 504	Extraction by method 504	Complete						mad
SM18 2120B	Color	2.5			2.5	Pt/Co	01/13/05	rmc
SM18 2150B	Odor	1			1	T.O.N.	01/13/05	rmc
SM18 4500CNE	Cyanide, Total	0.0100	U		0.0100	mg/L	01/17/05	bg
SM18 4500FC	Fluoride	0.20	U		0.20	mg/L	01/13/05	rmc
SM18 4500NO2B	Nitrite as N (NO2-N)	0.01	U		0.01	mg/L	01/14/05	jpp
525.2	525.2 Semi-volatile Subcontract	Complete				* Text	01/26/05	jmr
600/R-93-116	Asbestos Subcontract	Complete					01/28/05	jmr
EPA 900.0	Gross alpha/beta Subcontract	Complete				* Text	02/16/05	jmr
515.1	Herbicide (Drinking Water) Subcontract	Complete				ug/L	01/26/05	jmr
EPA 531.1	Method 531.1 Subcontract	Complete				Text	01/26/05	jmr
EPA 903	Radium 226 Subcontract	Complete					02/16/05	jmr
EPA 904.0	Radium 228 Subcontract	Complete				* Text	02/16/05	jmr
EPA 908.1	Uranium (Fluorimetric) Subcontract	Complete					02/16/05	jmr
EPA 504	GC Micro-Extractable Volatiles 1,2-Dibromoethane (EDB) 1,2-Dibromo-3-chloropropane	 0.020 0.020	 U U		 0.020 0.020	 ug/L ug/L	 01/26/05 01/26/05	 ljc ljc

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 244322 Date: 05/18/2007

CUSTOMER: Tim Miller Associates, Inc. PROJECT: PATTERSON CROSSING ATTN: Jon Dahlgren

Customer Sample ID: SE Well
Date Sampled.....: 01/12/2005
Time Sampled.....: 09:30
Sample Matrix.....: Pot. Water

Laboratory Sample ID: 244322-1
Date Received.....: 01/12/2005
Time Received.....: 11:10

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	ANALYZED	TECH
EPA 200.7	Metals Analysis (ICP)							
	Beryllium (Be)	1.0	U		1.0	ug/L	01/18/05	mad
	Copper (Cu)	25.0	U		25.0	ug/L	01/18/05	mad
	Iron (Fe)	74.6			60.0	ug/L	01/18/05	mad
	Manganese (Mn)	59.8			10.0	ug/L	01/18/05	mad
	Silver (Ag)	10.0	U		10.0	ug/L	01/18/05	mad
	Sodium (Na)	4280			200	ug/L	01/18/05	mad
	Zinc (Zn)	489			20.0	ug/L	01/18/05	mad
EPA 200.8	Metals Analysis (ICP-MS)							
	Antimony (Sb)	0.40	U		0.40	ug/L	01/17/05	mad
	Arsenic (As)	1.4	U		1.4	ug/L	01/17/05	mad
	Barium (Ba)	12.3			0.40	ug/L	01/17/05	mad
	Cadmium (Cd)	0.30	U		0.30	ug/L	01/17/05	mad
	Chromium (Cr)	0.45			0.30	ug/L	01/17/05	mad
	Lead (Pb)	0.30	U		0.30	ug/L	01/17/05	mad
	Nickel (Ni)	0.59			0.50	ug/L	01/17/05	mad
	Selenium (Se)	3.0	U		3.0	ug/L	01/17/05	mad
	Thallium (Tl)	0.30	U		0.30	ug/L	01/17/05	mad
EPA 502.2	Volatile Organics							
	Benzene	0.50	U		0.50	ug/L	01/21/05	ems
	Ethylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	Toluene	0.50	U		0.50	ug/L	01/21/05	ems
	o-Xylene	0.50	U		0.50	ug/L	01/21/05	ems
	m&p-Xylenes	0.50	U		0.50	ug/L	01/21/05	ems
	Naphthalene	0.50	U		0.50	ug/L	01/21/05	ems
	Methyl-tert-butyl-ether (MTBE)	1.0	U		1.0	ug/L	01/21/05	ems
	Chlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,3-Dichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,4-Dichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	Chloromethane	0.50	U		0.50	ug/L	01/21/05	ems
	Bromomethane	0.50	U		0.50	ug/L	01/21/05	ems
	Dichlorodifluoromethane	0.50	U		0.50	ug/L	01/21/05	ems
	Vinyl chloride	0.50	U		0.50	ug/L	01/21/05	ems
	Chloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	Methylene chloride	1.0	U		1.0	ug/L	01/21/05	ems
	Trichlorofluoromethane	0.50	U		0.50	ug/L	01/21/05	ems
	1,1-Dichloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	Bromochloromethane	0.50	U		0.50	ug/L	01/21/05	ems
	1,1-Dichloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	trans-1,2-Dichloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	cis-1,2-Dichloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	Chloroform	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dichloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	2,2-Dichloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dibromoethane (EDB)	0.50	U		0.50	ug/L	01/21/05	ems
	1,1,1-Trichloroethane	0.50	U		0.50	ug/L	01/21/05	ems

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 244322 Date: 05/18/2007

CUSTOMER: Tim Miller Associates, Inc. PROJECT: PATTERSON CROSSING ATTN: Jon Dahlgren

Customer Sample ID: SE Well
Date Sampled.....: 01/12/2005
Time Sampled.....: 09:30
Sample Matrix.....: Pot. Water

Laboratory Sample ID: 244322-1
Date Received.....: 01/12/2005
Time Received.....: 11:10

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	ANALYZED	TECH
	Carbon tetrachloride	0.50	U		0.50	ug/L	01/21/05	ems
	Bromodichloromethane	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dichloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	1,1-Dichloropropene	0.50	U		0.50	ug/L	01/21/05	ems
	Trichloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	1,3-Dichloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	Dibromochloromethane	0.50	U		0.50	ug/L	01/21/05	ems
	Dibromomethane	0.50	U		0.50	ug/L	01/21/05	ems
	Bromoform	0.50	U		0.50	ug/L	01/21/05	ems
	1,1,1,2-Tetrachloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	1,2,3-Trichloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	1,1,2,2-Tetrachloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	Tetrachloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	Bromobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	2-Chlorotoluene	0.50	U		0.50	ug/L	01/21/05	ems
	4-Chlorotoluene	0.50	U		0.50	ug/L	01/21/05	ems
	cis-1,3-Dichloropropene	0.50	U		0.50	ug/L	01/21/05	ems
	trans-1,3-Dichloropropene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dibromo-3-chloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	Isopropylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	Styrene	0.50	U		0.50	ug/L	01/21/05	ems
	n-Propylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	tert-Butylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	sec-Butylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,3,5-Trimethylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	p-Isopropyltoluene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2,4-Trimethylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	n-Butylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	Hexachlorobutadiene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2,4-Trichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2,3-Trichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,1,2-Trichloroethane	0.50	U		0.50	ug/L	01/21/05	ems
EPA 300.0	Ion Chromatography Analysis							
	Nitrate as N (NO3-N)	0.600			0.500	mg/L	01/12/05	bg
	Sulfate	14.3			5.00	mg/L	01/12/05	bg

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 244322 Date: 05/18/2007

CUSTOMER: Tim Miller Associates, Inc. PROJECT: PATTERSON CROSSING ATTN: Jon Dahlgren

Customer Sample ID: NW Well
Date Sampled.....: 01/12/2005
Time Sampled.....: 10:00
Sample Matrix.....: Pot. Water

Laboratory Sample ID: 244322-2
Date Received.....: 01/12/2005
Time Received.....: 11:10

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	ANALYZED	TECH
SM18 9223	Coliform, Total	Absent			POS/NEG	/100ml	01/12/05	mwr
SM18 9223	E. Coliform	Absent			POS/NEG	/100ml	01/12/05	mwr
EPA 180.1	Turbidity Assessment - Metals	Negative				Pos/Neg	01/14/05	mwr
EPA 245.1	Mercury (Hg)	0.20	U		0.20	ug/L	01/14/05	lms
EPA 504	Extraction by method 504	Complete						mad
SM18 2120B	Color	2.5			2.5	Pt/Co	01/13/05	rmc
SM18 2150B	Odor	1			1	T.O.N.	01/13/05	rmc
SM18 4500CNE	Cyanide, Total	0.0100	U		0.0100	mg/L	01/17/05	bg
SM18 4500FC	Fluoride	0.24			0.20	mg/L	01/13/05	rmc
SM18 4500NO2B	Nitrite as N (NO2-N)	0.11			0.05	mg/L	01/14/05	jpp
525.2	525.2 Semi-volatile Subcontract	Complete				* Text	01/26/05	jmr
600/R-93-116	Asbestos Subcontract	Complete					01/28/05	jmr
EPA 900.0	Gross alpha/beta Subcontract	Complete				* Text	02/16/05	jmr
515.1	Herbicide (Drinking Water) Subcontract	Complete				ug/L	01/26/05	jmr
EPA 531.1	Method 531.1 Subcontract	Complete				Text	01/26/05	jmr
EPA 903	Radium 226 Subcontract	Complete					02/16/05	jmr
EPA 904.0	Radium 228 Subcontract	Complete				* Text	02/16/05	jmr
EPA 908.1	Uranium (Fluorimetric) Subcontract	Complete					02/16/05	jmr
EPA 504	GC Micro-Extractable Volatiles 1,2-Dibromoethane (EDB) 1,2-Dibromo-3-chloropropane	 0.020 0.020	 U U		 0.020 0.020	 ug/L ug/L	 01/26/05 01/26/05	 ljc ljc

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 244322 Date: 05/18/2007

CUSTOMER: Tim Miller Associates, Inc. PROJECT: PATTERSON CROSSING ATTN: Jon Dahlgren

Customer Sample ID: NW Well
Date Sampled.....: 01/12/2005
Time Sampled.....: 10:00
Sample Matrix.....: Pot. Water

Laboratory Sample ID: 244322-2
Date Received.....: 01/12/2005
Time Received.....: 11:10

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	ANALYZED	TECH
EPA 200.7	Metals Analysis (ICP)							
	Beryllium (Be)	1.0	U		1.0	ug/L	01/18/05	mad
	Copper (Cu)	25.0	U		25.0	ug/L	01/18/05	mad
	Iron (Fe)	60.0	U		60.0	ug/L	01/18/05	mad
	Manganese (Mn)	12.1			10.0	ug/L	01/18/05	mad
	Silver (Ag)	10.0	U		10.0	ug/L	01/18/05	mad
	Sodium (Na)	9320			200	ug/L	01/18/05	mad
	Zinc (Zn)	177			20.0	ug/L	01/18/05	mad
EPA 200.8	Metals Analysis (ICP-MS)							
	Antimony (Sb)	0.40	U		0.40	ug/L	01/17/05	mad
	Arsenic (As)	1.4	U		1.4	ug/L	01/17/05	mad
	Barium (Ba)	36.5			0.40	ug/L	01/17/05	mad
	Cadmium (Cd)	0.30	U		0.30	ug/L	01/17/05	mad
	Chromium (Cr)	1.3			0.30	ug/L	01/17/05	mad
	Lead (Pb)	0.30	U		0.30	ug/L	01/17/05	mad
	Nickel (Ni)	1.4			0.50	ug/L	01/17/05	mad
	Selenium (Se)	3.0	U		3.0	ug/L	01/17/05	mad
	Thallium (Tl)	0.30	U		0.30	ug/L	01/17/05	mad
EPA 502.2	Volatile Organics							
	Benzene	0.50	U		0.50	ug/L	01/21/05	ems
	Ethylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	Toluene	0.50	U		0.50	ug/L	01/21/05	ems
	o-Xylene	0.50	U		0.50	ug/L	01/21/05	ems
	m&p-Xylenes	0.50	U		0.50	ug/L	01/21/05	ems
	Naphthalene	0.50	U		0.50	ug/L	01/21/05	ems
	Methyl-tert-butyl-ether (MTBE)	1.0	U		1.0	ug/L	01/21/05	ems
	Chlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,3-Dichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,4-Dichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	Chloromethane	0.50	U		0.50	ug/L	01/21/05	ems
	Bromomethane	0.50	U		0.50	ug/L	01/21/05	ems
	Dichlorodifluoromethane	0.50	U		0.50	ug/L	01/21/05	ems
	Vinyl chloride	0.50	U		0.50	ug/L	01/21/05	ems
	Chloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	Methylene chloride	1.0	U		1.0	ug/L	01/21/05	ems
	Trichlorofluoromethane	0.50	U		0.50	ug/L	01/21/05	ems
	1,1-Dichloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	Bromochloromethane	0.50	U		0.50	ug/L	01/21/05	ems
	1,1-Dichloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	trans-1,2-Dichloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	cis-1,2-Dichloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	Chloroform	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dichloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	2,2-Dichloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dibromoethane (EDB)	0.50	U		0.50	ug/L	01/21/05	ems
	1,1,1-Trichloroethane	0.50	U		0.50	ug/L	01/21/05	ems

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 244322 Date: 05/18/2007

CUSTOMER: Tim Miller Associates, Inc. PROJECT: PATTERSON CROSSING ATTN: Jon Dahlgren

Customer Sample ID: NW Well
Date Sampled.....: 01/12/2005
Time Sampled.....: 10:00
Sample Matrix.....: Pot. Water

Laboratory Sample ID: 244322-2
Date Received.....: 01/12/2005
Time Received.....: 11:10

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	ANALYZED	TECH
	Carbon tetrachloride	0.50	U		0.50	ug/L	01/21/05	ems
	Bromodichloromethane	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dichloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	1,1-Dichloropropene	0.50	U		0.50	ug/L	01/21/05	ems
	Trichloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	1,3-Dichloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	Dibromochloromethane	0.50	U		0.50	ug/L	01/21/05	ems
	Dibromomethane	0.50	U		0.50	ug/L	01/21/05	ems
	Bromoform	0.50	U		0.50	ug/L	01/21/05	ems
	1,1,1,2-Tetrachloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	1,2,3-Trichloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	1,1,2,2-Tetrachloroethane	0.50	U		0.50	ug/L	01/21/05	ems
	Tetrachloroethene	0.50	U		0.50	ug/L	01/21/05	ems
	Bromobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	2-Chlorotoluene	0.50	U		0.50	ug/L	01/21/05	ems
	4-Chlorotoluene	0.50	U		0.50	ug/L	01/21/05	ems
	cis-1,3-Dichloropropene	0.50	U		0.50	ug/L	01/21/05	ems
	trans-1,3-Dichloropropene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2-Dibromo-3-chloropropane	0.50	U		0.50	ug/L	01/21/05	ems
	Isopropylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	Styrene	0.50	U		0.50	ug/L	01/21/05	ems
	n-Propylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	tert-Butylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	sec-Butylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,3,5-Trimethylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	p-Isopropyltoluene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2,4-Trimethylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	n-Butylbenzene	0.50	U		0.50	ug/L	01/21/05	ems
	Hexachlorobutadiene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2,4-Trichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,2,3-Trichlorobenzene	0.50	U		0.50	ug/L	01/21/05	ems
	1,1,2-Trichloroethane	0.50	U		0.50	ug/L	01/21/05	ems
EPA 300.0	Ion Chromatography Analysis							
	Nitrate as N (NO3-N)	0.500	U		0.500	mg/L	01/12/05	bg
	Sulfate	17.2			5.00	mg/L	01/12/05	bg

* In Description = Dry Wgt.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 05/18/2007

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements will be noted in a case narrative.
Report Comments

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

2) Soil, sediment and sludge sample results are reported on a "dry weight" basis.

3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

Glossary of flags and qualifiers.

Inorganic Qualifiers (Q-Column)

U	Indicates that the compound was analyzed for but not detected.
1	Result fails applicable drinking water standards.
*	Duplicate analysis not within control limits.
N	Spiked sample recovery not within control limits.
E	Indicates an estimated value because of the presence of interferences.
W	Post digestion spike for furnace AA analysis is out of the control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
+	Correlation coefficient for the MSA is less than 0.995
B	The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).

Organic Qualifiers (Q-Column)

U	Indicates that the compound was analyzed for but not detected.
J	Indicates an estimated value. This compound meets the identification criteria, but the result is less than the specified detection limit.
B	Indicates that the analyte was found in both the sample and its associated laboratory blank.
D	Indicates all compounds identified in an analysis at a secondary dilution factor.
E	Indicates that the analyte in an analysis has exceeded the linear calibration range.
RE	Indicates a re-analyzed sample

Glossary of Terms

Surrogates (Surrogate Standards) - an organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process. For semi-volatiles, volatiles and pesticides/Arochlors, surrogate compounds are added to every blank, sample, matrix sample, matrix spike, matrix sample duplicate, matrix spike blank, and standard. These are used to evaluate analytical efficiency by measuring recovery. Poor surrogate recovery may indicate a problem with the sample composition.

Matrix Spike - an aliquot of a sample (water or soil) fortified (spiked) with known quantities of specific compounds (target analytes) and subjected to the entire analytical procedure in order to indicate the appropriateness of the method for the matrix by measuring recovery. The spiking occurs prior to sample preparation and analysis. Poor spike recovery may indicate a problem with the sample composition.

Internal Standards - an organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process. For GC/MS semi-volatiles and volatiles, internal standards are added to every blank, sample, matrix spike, matrix spike duplicate, matrix spike blank, and standard. Internal standard responses outside of established limits will adversely affect the quantitation and final concentration of target compounds.

LABORATORY CHRONICLE

Job Number: 244322 Date: 05/18/2007

CUSTOMER: Tim Miller Associates, Inc. PROJECT: PATTERSON CROSSING ATTN: Jon Dahlgren

Lab ID: 244322-1 Client ID: SE Well Date Recvd: 01/12/2005 Sample Date: 01/12/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
525.2	525.2 Semi-volatile	1	84025		01/26/2005	0000	
600/R-93-116	Asbestos	1	84170		01/28/2005	0000	
SM18 2120B	Color	1	83183		01/13/2005	1650	
SM18 4500CNE	Cyanide, Total	1	83500		01/17/2005	0720	
EPA 504	Extraction by Method 504	1	83932				
SM18 4500FC	Fluoride (ISE)	1	83167		01/13/2005	1400	
EPA 504	GC Micro-Extractable Volatiles	1	84398		01/26/2005	0000	
EPA 900.0	Gross alpha/beta	1	85189		02/16/2005	0000	
515.1	Herbicide (Drinking Water)	1	84027		01/26/2005	0000	
EPA 200.7	ICP Acid Digestion	1	83245				
EPA 300.0	Ion Chromatography Analysis	1	83157		01/12/2005	1526	
EPA 245.1	Mercury (CVAA)	1	83233		01/14/2005	1052	
EPA 200.7	Metals Analysis (ICP)	1	83491		01/18/2005	1338	
EPA 200.8	Metals Analysis (ICP-MS)	1	83374		01/17/2005	1518	
EPA505	Method 505 Pesticides	1	84024		01/26/2005	0000	
EPA 531.1	Method 531.1	1	84026		01/26/2005	0000	
SM18 4500NO2B	Nitrite, Spectrophotometric	1	83212		01/14/2005	0300	
SM18 2150B	Odor	1	83182		01/13/2005	1650	
EPA 903	Radium 226	1	85190		02/16/2005	0000	
EPA 904.0	Radium 228	1	85191		02/16/2005	0000	
SM18 9223	Total/E. Coliform (Colilert)	1	83161		01/12/2005	1610	
EPA 180.1	Turbidity Assessment - Metals	1	83108		01/14/2005	0948	
EPA 908.1	Uranium (Fluorimetric)	1	85192		02/16/2005	0000	
EPA 502.2	Volatile Organics	1	83839		01/21/2005	0000	

Lab ID: 244322-2 Client ID: NW Well Date Recvd: 01/12/2005 Sample Date: 01/12/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
525.2	525.2 Semi-volatile	1	84025		01/26/2005	0000	
600/R-93-116	Asbestos	1	84170		01/28/2005	0000	
SM18 2120B	Color	1	83183		01/13/2005	1650	
SM18 4500CNE	Cyanide, Total	1	83500		01/17/2005	0720	
EPA 504	Extraction by Method 504	1	83932				
SM18 4500FC	Fluoride (ISE)	1	83167		01/13/2005	1406	
EPA 504	GC Micro-Extractable Volatiles	1	84398		01/26/2005	0000	
EPA 900.0	Gross alpha/beta	1	85189		02/16/2005	0000	
515.1	Herbicide (Drinking Water)	1	84027		01/26/2005	0000	
EPA 200.7	ICP Acid Digestion	1	83245				
EPA 300.0	Ion Chromatography Analysis	1	83157		01/12/2005	1536	
EPA 245.1	Mercury (CVAA)	1	83233		01/14/2005	1054	
EPA 200.7	Metals Analysis (ICP)	1	83491		01/18/2005	1403	
EPA 200.8	Metals Analysis (ICP-MS)	1	83374		01/17/2005	1520	
EPA505	Method 505 Pesticides	1	84024		01/26/2005	0000	
EPA 531.1	Method 531.1	1	84026		01/26/2005	0000	
SM18 4500NO2B	Nitrite, Spectrophotometric	1	83212		01/14/2005	0300	
SM18 2150B	Odor	1	83182		01/13/2005	1650	
EPA 903	Radium 226	1	85190		02/16/2005	0000	
EPA 904.0	Radium 228	1	85191		02/16/2005	0000	
SM18 9223	Total/E. Coliform (Colilert)	1	83161		01/12/2005	1610	
EPA 180.1	Turbidity Assessment - Metals	1	83108		01/14/2005	0959	
EPA 908.1	Uranium (Fluorimetric)	1	85192		02/16/2005	0000	
EPA 502.2	Volatile Organics	1	83839		01/21/2005	0000	

Appendix E

BORING LOG

Soil Sampling Log

Connecticut Test Borings, LLC
P.O. Box 69 - Seymour, CT 06483
GEOTECHNICAL & ENVIRONMENTAL DRILLING
(203) 888-3857
FAX: (203) 888-0655

DATE STARTED	3/29/2004
DATE FINISHED	3/29/2004
WEIGHT OF HAMMER	140 Lbs.
HAMMER FALL	30"
GROUND WATER OBSERVATION	
DATE	3/29/2004 -
TIME	0 Hours -
DEPTH	7'-0" -
SAMPLER Dia. (Type/O.D./I.D.)	SS 2" / 1-3/8"
TYPE OF RIG	CME-55 - Track

ESPECIALLY COMPILED FOR
Baldwin Hills Development Corp
1699 Rte. 6 Suite 1
Carmel, NY 10512

SHEET	1 OF 1
PROJECT No.	C04116
LOCATION	Rte 311 Patterson, NY
OFFSET	
GROUND ELEVATION	
HOLE No.	B-12
CASING	
SAMPLER	SS 5"
CORE BARREL	

CASING BLOWS	DEPTH	SAMPLE DEPTH (FEET)	SAMP TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12-18	18-24	DENSITY OR CONSIST MOISTURE	PROFILE CHANGE DEPTH · ELEV.	FIELD IDENTIFICATION OF SOILS / REMARKS	SAMPLE NO.	PEN	REC	BORE / WELL (NOT TO SCALE)
									4"	DK. BROWN SILTY SAND, ROOTS				
										BROWN-OLIVE SILTY SAND				
	-5									" SAME " W/ GRAVEL, COBBLESTONES, FRAGMENTS OF ROCK				
	-10								12'					
	-15									BROWN-OLIVE SILTY SAND MIXED W/ WEATHERED ROCK				
	-20								18'	REFUSAL				
	-25													
	-30													
	-35													
	-40													
	-45													
	-50													

Proportions used: trace = 0-10%, little = 10-20%, some = 20-35%, and = 35-50%

DRILLER: A.W.
HELPER: J.C.
SOILS ENGINEER:
DRILLING INSPECTOR:
NOT RESPONSIBLE FOR SAMPLE STORAGE AFTER 30 DAYS

SAMPLE TYPE
C = CORED
W = WASHED
SS = SPLIT SPOON
UP = UNDISTURBED PISTON
TP = TEST PIT
UT = UNDISTURBED THINWALL

COHESIONLESS SOILS	
0 - 4	VERY LOOSE
4 - 10	LOOSE
10-30	MEDIUM
30-50	DENSE
50+	VERY DENSE

COHESIVE SOILS	
0 - 2	VERY SOFT
2 - 4	SOFT
4 - 8	MEDIUM
8 15	STIFF
15-30	VERY STIFF
30+	HARD

FILE: C04116

Appendix F

STORMWATER POLLUTION
PREVENTION PLAN

INSITE
ENGINEERING, SURVEYING &
LANDSCAPE ARCHITECTURE, P.C.

STORMWATER POLLUTION PREVENTION PLAN

For

PATTERSON CROSSING RETAIL CENTER
Town of Patterson and Kent, New York

February 4, 2008

Owner Information:

Hudson Valley Realty Corp.
1699 Route 6, Suite 1
Carmel, New York 10512
845-228-1400

Contractor Information:

To Be Determined

Prepared by:
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place, Carmel, New York 10512

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1.3 Proposed Stormwater Runoff Conditions 2

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APPENDICES

Appendix A Pre-Development Computer Data
Appendix B Post–Development Computer Data
Appendix C Annual Pollutant Loading Rate Calculations
Appendix D Project and Owner Information
Appendix E NYSDEC SPDES for Construction Activities Construction Site Log Book
Appendix F Supplemental Phosphorus Loading Calculation (Simple Method)
Appendix G Erosion and Sediment Control Plan Review Checklist
Appendix H Offsite Drainage Improvements Discussion

FIGURES

Figure 1: Location Map
Figure 2: Pre-Development Drainage Map
Figure 3: Post-Development Drainage Map
Figure 4: Soils Map
Figure 5: Proposed Offsite Stormwater Improvements
Figure 6: Stormwater Testing Plan

NOTE: This report in conjunction with the project plans make up the complete Stormwater Pollution Prevention Plan.

1.0 INTRODUCTION

1.1 Project Description

The subject project is located on a 90.5± acre parcel located in both the Town of Patterson and Kent adjacent to Interstate 84 and New York State Route 311. The parcel is located such that the majority of the property is located in the Town of Patterson (see Figure 1 for a location map). The property is designated as Tax Map Parcel No. 22.-3-1, 22.84-2-13, 33.-2-23 and 34.-2-3 in the Town of Patterson, and 22.-2-48 in the Town of Kent. The parcel is zoned as I (Industrial), and R-4 (Residential) in the Town of Patterson, and C (Commercial) in the Town of Kent.

The parcel is located in both the Middle Branch Reservoir and East Branch Reservoir basins, with the majority of the site draining to the East Branch Reservoir basin. The subject parcel consists of woods and brush throughout the majority of the property. The only development on the subject property is the existing telecommunications facility located in the southwest portion of the property. There is an existing NYSEG right of way in the southeast portion of the property that is to remain undisturbed. The property ranges in elevation from elevation 624 adjacent to the Middle Branch of Croton River to elevation 894 on the crest of the knoll near the existing telecommunications facility. The slopes throughout the proposed project range from flat to generally steep slopes. The soil types on the property are generally characterized as moderately deep, well-drained soils. Figure 4 provides a breakdown of the soil types and a listing of these soils in accordance with the *Soils Survey of Putnam and Westchester Counties*. A Town of Kent regulated wetland is located adjacent to the Middle Branch Croton River in the northwest property corner. In addition to the onsite wetland there are also several watercourses on the property that have been delineated by the New York City Department of Environmental Protection. All of the watercourses drain off of the property towards NYS Route 311 before merging and entering the Middle Branch of Croton River.

The subject parcel is proposed to be developed as a retail center. The retail center will consist of four (4) buildings and associated parking for each. Access to the site will be provided by a proposed access road off of NYS Route 311. Improvements associated with the proposed access road for the site include the proposed widening of NYS Route 311. This widening is necessary to mitigate traffic safety issues involved with the proposed access to the site. There is an additional emergency access to the site off of Concord Road. Water will be supplied to the project by drilled wells and wastewater generated will be treated with a subsurface sewage treatment system.

The development will include stormwater management improvements, which will convey runoff to, and through, a series of stormwater management practices. The proposed practices will treat the post development stormwater so that the offsite drainage conditions will not be significantly altered from the pre development conditions. The project will also include stormwater improvements to reduce the total phosphorous in the runoff thereby contributing to regionally desired non-point source phosphorus reductions.

1.2 Existing Stormwater Runoff Conditions

The existing stormwater runoff from the subject parcel currently drains to two reservoir basins. Approximately 62 acres drains to the East Branch Reservoir and approximately 28 acres drains to the Middle Branch Reservoir. Three subcatchments and their associated design points / lines were chosen to assess the stormwater runoff discharging from the site, as shown in Figure 2. The stormwater runoff from subcatchments PRE 1 and PRE 2 discharges to Design Points 1 and 2 respectively, which discharges into the East Branch Reservoir basin. The stormwater runoff from subcatchment PRE 3 discharges to Design Line 3, which discharges into the Middle Branch Reservoir basin.

The stormwater runoff from subcatchment PRE 1 currently sheets off of the ridgeline along the western property line across the property from west to east. The stormwater runoff from subcatchment PRE 1 discharges to a cut-off swale located along the property's boundary with I-84. The cut-off swale conveys the runoff to another swale that discharges down the slope adjacent to I-84, to Design Point 1. The drainage from Design Point 1 crosses underneath I-84 with an ultimate discharge point into the off-site wetland located southeast of the I-84 / Fair Street crossing.

The stormwater runoff discharging from subcatchment PRE 2 is very similar to that of subcatchment PRE 1 in that the runoff sheets off of the high point in the property towards the eastern property line. The runoff sheets across the property and discharges into a cut-off swale at the top of the slope adjacent to I-84. The cut-off swale drains to the south to an existing catch basin in Fair Street. The

catch basin is the collection point for all of the stormwater runoff generated from subcatchment PRE 2, therefore it was chosen as Design Point 2. The catch basin chosen is located in the existing stormwater collection system in Fair Street. The system in Fair Street joins up with the main drainage line system of I-84 before discharging to the offsite wetland located to the southeast of the I-84, Fair Street crossing.

The stormwater runoff from the third subcatchment PRE 3 discharges to Design Line 3. The design line is located along the southern side of the Middle Branch of the Croton River in the northwest property corner. This design line was chosen to assess possible impacts to the river. The Middle Branch of the Croton River is classified a class C (T) stream per the NYSDEC. This classification designates the river a trout protected waterbody. There are three distinct components to the stormwater runoff discharging to Design Line 3. The three components of the stormwater runoff discharging to the design line are the stormwater sheeting off of the hillside directly into the river, the piped runoff from NYS Route 311 and the I-84 exit ramps, and the runoff transported in the watercourse / eroded ditch flowing from a developed section of Lake Carmel, down the hillside adjacent to the river.

One of the existing watercourses flagged by the NYCDEP, currently drains the Lake Carmel residential development located along the ridgeline at the western property line. The stormwater runoff from Concord Road is piped onto the subject property before discharging to the surface at the origin of the ditch / watercourse. The unmitigated runoff has caused massive erosion along the length of the channel, ultimately resulting in an eroded 6' to 8' deep drainage ditch. This eroded ditch is a direct source of sediment being discharged into the Middle Branch of the Croton River and the north end of Lake Carmel. Over the years thousands of tons of sediment have been eroded out of this area forming the unstable drainage ditch down the hillside.

1.3 Proposed Stormwater Runoff Conditions

The proposed stormwater management and drainage area boundaries have been modeled such that the reservoir basin divides have been generally maintained. The post development drainage areas are shown on Figure 3. The stormwater discharging to Design Point 1 consists of the majority of the development on the site. The stormwater runoff will be collected in the proposed drainage system and conveyed to the ponds for treatment. The treatment train for the bulk of the development (subcatchments 1.1, 1.2, 1.3) is three wet stormwater ponds in series (ponds 1.1P, 1.2P, 1.4P). A smaller portion of the development, subcatchment 1.3, discharges to Design Point 1 after treatment in two wet ponds in series (ponds 1.3P, 1.4P). The first pond in both treatment trains, pond 1.1P and 1.3P have been designed as a micropool extended detention ponds (P-1) per the *New York State Department of Environmental Conservation Stormwater Management Design Manual* (Design Manual). Additionally ponds 1.2P and 1.4P have been designed as extended detention wet ponds. The proposed stormwater management practices will provide the necessary pollutant removals while attenuating the peak stormwater flows to predevelopment levels to Design Point 1.

The proposed stormwater runoff discharging to Design Point 2 will continue to sheet down the hillside from west to east in the proposed condition. The peak stormwater flows have been reduced in the post-development condition due to a reduction in area draining to the design point. A portion of subcatchment PRE 2 has been diverted in the post-development condition to Design Point 1 to treat the proposed development. The reduction in drainage area to Design Point 2, despite the change in ground cover for the proposed septic area, results in a reduction in peak flows and an overall reduction in pollutant loading. The reduction in phosphorous discharging to Design Point 2 creates a TMDL benefit to the receiving waters.

There are three components to the post-development stormwater runoff discharging to the Middle Branch of the Croton River (Design Line 3). The first component of the runoff is generated from the northern portion of the site including the access road, northern parking area, and side slopes. A treatment train consisting of two stormwater ponds in series (ponds 3.1P, 3.2P) is proposed to treat a portion of the entrance road, as well as the lower parking areas for the main retail pad as shown as subcatchments 3.1 on Figure 3. Subcatchment 3.2 consists of the northern portion of the access road and adjacent side slopes in addition to the offsite untreated area along NYS Route 311 and portions of the Interstate I-84 median and exit ramps. The treatment of the offsite runoff from the adjacent roadways in subcatchment 3.2 will provide a TMDL benefit to the watershed. Subcatchment 3.2 will be treated in pond 3.2P before discharging to Design Line 3. As part of the proposed development and construction of pond 3.2P, it is proposed to renovate a portion of the existing stormwater collection system along NYS Route 311 to allow for the proposed road safety improvements to NYS Route 311. The outlet of pond 3.2P will discharge into

the proposed renovated collection system along the south side of NYS Route 311 which outlets into an existing roadside swale that flows directly into the Middle Branch of the Croton River. Both ponds 3.1P and 3.2P have been designed as a micropool extended detention ponds (P-1) in accordance with the Design Manual.

The second component of the stormwater runoff discharging to Design Line 3 is the untreated area discharging directly to the design line namely subcatchment 3.3. The drainage area to the watercourse found in subcatchment 3.3 will be maintained allowing for continued flow to discharge directly to Design Line 3.

The third component of stormwater runoff discharging to Design Line 3 is the runoff produced by the existing Lake Carmel residential development along Concord Road that discharges to a highly eroded ditch / watercourse that flows down the slope towards NYS Route 311. Although this pond is not required for the proposed development, it is offered to further mitigate down stream impacts and rectify a chronic source of sediment to Lake Carmel. The stormwater from the existing development, shown as subcatchment 3.4 in Figure 3, will be treated in pond 3.4P and will outlet to the existing watercourse. This pond has been designed as a micropool extended detention pond (P-1), per Design Manual. These improvements will provide mitigation of the previously untreated stormwater, while continuing to feed the watercourse tributary to the Middle Branch of the Croton River. The treatment of this previously untreated runoff will provide a TMDL benefit to the watershed.

Appropriate measures to address thermal impacts have been taken into account in the design of the stormwater ponds discharging to Design Line 3. The classification of the Middle Branch of the Croton River (at Design Point 3) as a trout protected waterbody per the NYSDEC necessitates variations in the design of the stormwater ponds. The classifications of the ponds discharging to the design line are micropool extended detentions ponds. These ponds have relatively small permanent pools, thus reducing the possibility for increased thermal impacts to the river. Micropool extended detention ponds are the recommended practice for discharge into trout protected waterbodies per the NYSDEC design manual. Additionally the attenuation for the 1-year 24-hour design storm has been reduced from 24 hours to 12 hours, per provisions found in the design manual. The stormwater for the 1-year storm is released over a shorter period of time to eliminate the potential for increased temperature of stormwater runoff discharging to the trout stream. All of the stormwater ponds discharging to Design Line 3 are located on a north-facing slope, thus reducing the amount of direct sunlight on the permanent pools. Additionally the areas on the northern slopes of two of the ponds have been left undisturbed to provide additional shading of the permanent pools. The siting of the ponds along with the design aspects of the ponds have taken into account the provisions set forth in the NYSDEC design manual to help reduce the thermal impacts on the receiving trout stream.

In an effort to reduce the phosphorus loading to both of the reservoir basins, offsite area is proposed to be treated in the proposed condition to provide a TMDL benefit for both receiving reservoir basins. As previously mentioned there are numerous off site improvements proposed in association with the proposed development of the site. It is proposed to treat offsite runoff from the residential development to the west of the project, a portion of NYS Route 311 and the exit ramps from Interstate I-84, to provide a TMDL benefit to the stormwater runoff discharging to Design Line 3, and the Middle Branch Reservoir Basin. Similar to the offsite improvements in the Middle Branch Reservoir basin, it is proposed to provide offsite stormwater improvements within the East Branch Reservoir basin as well. As shown in Figure 5, the offsite area proposed to be treated is the Putnam County Highways Facility (PCHF) along Fair Street in the Town of Patterson. It is proposed to capture and treat the PCHF subcatchments in two micropool extended detention ponds to provide an additional stormwater benefit to the receiving reservoir basin. This approach of treating on and off site stormwater will assure that the development doesn't impede the long-term goals of the TMDL efforts. The proposed TMDL benefit at the PCHF is in close proximity to the subject project, but does not discharge either Design Point 1 or 2, therefore the benefit is only taken credit for in the additional stormwater quality analysis as requested by the New York State Watershed Inspector General, included in Appendix F.

2.0 STORMWATER MANAGEMENT

The stormwater management on the subject project has been designed in compliance with the New York City Department of Environmental Protection (NYCDEP) requirements. Water quality on this project has been addressed to meet the standards with a combination of swales and stormwater ponds designed in series. Additionally 24-hour plug flow detention of the 2-year, 24-hour storm has been provided with the stormwater management practices to meet the NYCDEP requirements. Attenuation in the stormwater practices has been provided for the 2, 10, 25, and 100-year, 24-hour design storms to meet the requirements of the NYCDEP.

The stormwater management on the subject project has also been design in accordance with the New York State Department of Environmental Conservation (NYSDEC) requirements. Multiple series of stormwater ponds have been designed to meet the water quality volume treatment requirements for the NYSDEC. Detention of the one-year center of mass for the 1-year, 24-hour design storm for 24 hours has been provided in the stormwater practices discharging to Design Point 1, to meet the NYSDEC requirements for Stream Channel Protection Cp_v. Additionally detention of the center of mass for the1-year, 24-hour design storm for 12 hours has been provided in the stormwater practices discharging to Design Line 3. The shorter detention time for stormwater practices discharging to Design Line 3 is attributed to the requirements set forth in the design manual for stormwater practices discharging to trout protected streams. Attenuation of the 10-year and 100-year, 24-hour design storm has been provided to meet the NYSDEC requirements for Overbank Flood Control (Q_r) and Extreme Flood Control (Q_f) respectively.

2.1 Quantitative Analysis

The "HydroCAD" Stormwater Modeling System," by Applied Microcomputer Systems of Chocorua, New Hampshire, was used to model and assess the stormwater flows for the subject project. HydroCAD is a computer-aided design program for modeling the hydrology and hydraulics of stormwater runoff. It is based primarily on hydrology techniques developed by the United States Department of Agriculture, Soil Conservation Service (USDA, SCS) TR-20 method combined with standard hydraulic calculations. The program was used to analyze the 1-year, 2-year, 10-year, 25-year and 100-year, 24-hour design storms. Peak flows were calculated for both the pre-development condition and the post-development condition. The input requirements for the HydroCAD computer program are as follows:

Subcatchments (contributing watershed/sub-watersheds)

- Design storm rainfall in inches
- CN (runoff curve number) values which are based on soil type and land use/ground cover
- Tc (time of concentration) flow path information

Stormwater Ponds

- Surface area at appropriate elevations
- Flood elevation
- Outlet structure information

The following is a general description of the input data used to calculate the pre- and post-development stormwater runoff values. For detailed information for each subcatchment and pond, see Appendices A & B.

The precipitation values for the various design storms analyzed were obtained from the local County Soil and Water Conservation District office. The values provided are for 24-hour design storms in Putnam County.

Design Storm	24-Hour Rainfall
1-Year	2.8"
2-Year	3.5"
10-Year	5.0"
25-Year	6.0"
100-Year	7.5"

The CN (runoff curve number) values utilized in this report were referenced from the USDA, SCS publication *Urban Hydrology for Small Watersheds*. The following is a summary of the various land uses/ground covers and their associated CN values utilized in this report.

Land Use/Ground Cover	CN Value
>75% Grass Cover, C Soil	74
Woods, C Soil	70
1-Acre Lots 20% Impervious, C Soil	79
Suburban Shopping Center, C Soil	94
Paved Parking and Roofs	98

The hydrologic soils groups for the project consist of mainly of C soils. The soils on the site consist of Chatfield – Charlton complex (CsD, CrC), Paxton Fine Sandy Loam (PnB, PnC, PnD), Woodbridge Loam (WdB), Ridgebury Loam (RdB), Udorthents (Ub, Uc), and Urban Land – Paxton (UpC).

The quantitative analysis performed for the subject project involves the assessment of two design points and one design line as shown on Figure 3. The following table summarizes the calculated pre-development and post-development peak stormwater runoff flows:

PEAK FLOW SUMMARY (C.F.S.)

24-HOUR DESIGN STORM								
	2-YEAR		10-YEAR (Qp)		25-YEAR		100-YEAR (Qf)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Design Point 1 (Interstate 84)	22.41	6.54	47.02	29.57	65.04	53.75	93.52	93.46
Design Point 2 (Fair Street)	26.08	19.71	56.12	40.59	78.41	55.86	113.68	79.81
Design Line 3 (Middle Branch of Croton River)	44.67	28.44	86.60	66.45	116.53	89.92	162.82	130.44

As seen by the above summary, the post-development peak flows for the 2-, 10-, 25-, and 100-year design storms have been attenuated to be less than the pre-development peak flows.

To meet the NYSDEC requirements for Stream Channel Protection $Cp_{v,}$ the 24-hour detention of the 1-year 24-hour design storm has been provided within the ponds discharging to Design Point 1 and 12-hour detention of the 1-year 24-hour design storm has been provided within the ponds discharging to Design Line 3. As previously stated the shorter detention time for stormwater practices discharging to Design Line 3 is attributed to the requirements set forth in the design manual for stormwater practices discharging to trout protected streams. The following table summarizes the 1-year 24-hour design storm center of mass detention time as shown in Appendix B for all of the proposed ponds on the site. For detailed information see Appendix B. The following table summarizes the center of mass detention times of the treatment train prior to discharging out of the stormwater management system.

CENTER OF MASS DETENTION TIME (MIN) FOR 1-YEAR, 24 HOUR DESIGN STORM

Pond	Discharge Point	Center of Mass Detention (Hours)
1.1P	Design Point 1	28.8
1.3P		25.4
3.1P	Design Line 3	16.0
3.2P		23.4
3.4P		14.3

As shown in the table above a minimum of 12 hours has been provided within the ponds prior to discharging from the site at Design Line 3. Additionally a minimum of 24 hours has been provided within the ponds prior to discharge from the site at Design Point 1. By providing between 12 and 24 hours of detention of the center of mass for the 1-Year, 24-hour design storm to the trout stream and 24 hours of detention of the center of mass for the 1-Year, 24-hour design storm the NYSDEC requirements for Stream Channel Protection (Cp_v) have been met.

2.2. Qualitative Analysis

Estimates of pre-development and post-development discharges of BOD, TP, TN, and TSS have been calculated for the subject project. The pollutant loading coefficient method was utilized to calculate the annual export of the above-mentioned pollutants. The New York State Department of Environmental Conservation (NYSDEC) publication *Reducing the Impacts of Stormwater Runoff from New Development* was referenced to determine appropriate loading rates for BOD. The publication *Fundamentals of Urban Runoff Management: Technical and Institutional Issues* produced by the Terrene Institute was referenced to determine appropriate loading rates for TP, TN and TSS. The appropriate loading rates were then utilized to calculate the annual pollutant export values. Variables involved with this calculation include soil type and land use/ground cover characteristics.

The following table summarizes the pollutant loading rates utilized for the subject project.

SUMMARY OF POLLUTANT LOADING RATES (LBS/ACRE/YEAR)

Land Use/Ground Cover	BOD	TP	TN	TSS
Forest	7.0	0.10	1.8	77.0
Grass	7.0	0.12	3.7	308.0
Commercial	163.0	0.71	4.6	717.0
Single Family Residential (Low Density)	23.0	0.49	3.6	178.0
Road	163.0	1.00	2.1	447.0

The primary treatment for stormwater runoff discharging from the subject project will be stormwater ponds. The NYCDEP regulations state that the stormwater runoff must be “captured and treated” in the proposed condition for quality purposes. The accepted method to meet the NYCDEP quality regulations is to provide 24-hour plug flow detention time for the 2-year 24-hour design storm. The proposed ponds have been design to discharge the 2-year, 24-hour storm over 24 hours or more as required by the NYCDEP regulations. In addition to stormwater ponds, stormwater quality treatment will be accomplished with the implementation of dry grass swales.

The following pollutant removal efficiencies are referenced from the publication *Reducing the Impacts of Stormwater Runoff from New Development*, prepared by the NYSDEC. By meeting the requirements set forth by the NYCDEP, which exceed the requirements in *Impacts* for the Design 2 extended detention basins, the pollutant removal efficiencies for a Design 2 extended detention pond can be applied for the proposed ponds on the site.

LONG TERM POLLUTANT REMOVAL EFFICIENCIES

Treatment Method	BOD	TP	TN	TSS
Design 2 Extended Detention Basins	40%-60%	40%-60%	20%-40%	80%-100%
Grass Swale	20%-40%	20%-40%	20%-40%	20%-40%

The following table summarizes the estimated pre-development and post-development annual pollutant loads (calculated in Appendix C) calculated for the subject project.

ANNUAL POLLUTANT SUMMARY TO DESIGN POINT 1

	Annual Loads (lb/yr)			
	BOD	**TP**	**TN**	**TSS**
Pre-Development Annual Pollutant Loads	338.0	5.56	76.5	3380.5
Post-Development Annual Pollutant Loads	1309.4 to 467.5	6.62 to 2.51	120.6 to 61.1	1121.1 to 616.0

ANNUAL POLLUTANT SUMMARY TO DESIGN POINT 2

	Annual Loads (lb/yr)			
	BOD	**TP**	**TN**	**TSS**
Pre-Development Annual Pollutant Loads	289.1	4.13	74.3	3180.1
Post-Development Annual Pollutant Loads	182.7	2.81	66.2	4342.8

ANNUAL POLLUTANT SUMMARY TO DESIGN LINE 3

	Annual Loads (lb/yr)			
	BOD	**TP**	**TN**	**TSS**
Pre-Development Annual Pollutant Loads	1389.2	12.16	115.7	9209.7
Post-Development Annual Pollutant Loads	1274.9 to 854.0	9.84 to 6.77	93.6 to 66.6	2444.7 to 451.5

As seen by the above summary, the post-development pollutant loads are within the range of the pre-development pollutants of concern as required by the NYCDEP regulations in all instances with two exceptions. Relative to the two exceptions, it is proposed to install a hydrodynamic separator in Fair Street to address the increase in TSS discharging to Design Point 2 and the wetland immediately downstream of Design Point 1 is large enough to assimilate any increase in the BOD discharging from the site.

With respect to phosphorous, which is the pollutant of concern in the subject TMDL watersheds, the SWPPP for the project is expected to achieve better than the calculated mean removal efficiencies due to adjunct stormwater treatment practices that have been incorporated into the project design, but not considered in the stormwater treatment calculations. These adjuncts include catch basin/drain inlet sumps, turf filter strips, forested filter strips, and the addition of permanent pools in the stormwater basins. The stormwater basin permanent pools will include landscaping capable of removing dissolved phosphorous. Based on the proposed SWPPP the applicant believes the project will not impact the Town of Kent or Patterson's ability to achieve the established TMDL, and the SWPPP does propose stormwater measures to reduce phosphorous loading to the maximum extent practicable.

The NYSDEC SPDES General Permit GP-02-01 requires that the Water Quality Volume (WQ_v) be treated in order to provide pollutant removal. The WQ_v is directly related to the amount of impervious cover proposed on the project area. The treatment of the stormwater discharging to Design Point 1 will be accomplished in ponds 1.1P and 1.3P. Ponds 1.1P and 1.3P have been designed as micropool extended

detention ponds per the NYSDEC Design Manual. The treatment of the water quality volume at Design Line 3 will be accomplished within the permanent pools of ponds 3.1P, 3.2P, and 3.4P. Ponds 3.1P, 3.2P, and 3.4P have also been designed as micropool extended detention ponds per the NYSDEC Design Manual. The following equation was used to determine the water quality volume for each of the contributing areas to the aforementioned stormwater ponds:

$$\text{The water quality volume shall be } WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where,

WQ_v = water quality volume (in acre-feet)
P = 90% Rainfall Event Number
R_v = 0.05 + 0.009(I), where I is percent impervious cover
A = site area in acres

The following table summarizes the water quality volume calculations for each subcatchment discharging to a NYSDEC stormwater practice:

Pond	P (in.)	R_v	A* (ac.)	WQ_v (ac-ft)	WQ_v (cf)
1.1P	1.2	0.58	35.5	2.06	89,733
1.3P		0.63	10.9	0.69	30,056
3.1P		0.37	10.4	0.38	16,553
3.2P		0.32	35.4	1.13	60,112
3.4P		0.20	4.0	0.08	3,485

* Information regarding contributing areas to stormwater ponds is shown in Appendix B

The treatment of the water quality volume is related to the storage volume within the permanent pool of the associated treatment practice. Table 6.1 in the NYSDEC Design Manual provides a volume distribution breakdown of each of the pond design variations. The following table summarizes the volume requirements and the volume provided in the proposed wet stormwater ponds:

Pond	NYSDEC Design Practice Designation	Minimum % WQ_v In Permanent Pool	Permanent Pool Storage Volume Provided** (cf)	WQ_v (as calculated above) (cf)	% WQ_v Provided in Permanent Pool
1.1P	Micropool Extended Detention Pond (P-1)	20% min	102,450	89,733	100% +
1.3P			36,875	30,056	100% +
3.1P			21,600	16,553	100% +
3.2P			24,850	60,112	41%
3.4P			8,000	3,485	100% +

** Information regarding pond volumes within permanent pool taken from Appendix B

As shown in the above table, the water quality volume storage requirements set forth in the NYSDEC Design Manual have been met. By meeting the Water Quality Volume requirements through employment of a pocket pond, a micropool extended detention pond, and a wet extended detention ponds, the water quality objectives of the NYSDEC to treat the water quality volume have been met.

2.3 Phosphorus Loading Analysis

As previously stated the subject site is located in the Middle Branch and East Branch reservoir basins. Both of the reservoir basins are identified as waterbodies not meeting water quality standards. The state has identified phosphorus as the pollutant of concern and has developed a total maximum daily load (TMDL) for phosphorus in the reservoirs. Phosphorus is a nutrient for algae growth, and algae can cause odor and taste problems within the City's water supply. The State and City regulations require that any development with a potential to discharge phosphorus located within a reservoir basin with an

approved TMDL must assess the potential impacts of the pollutant. Thus the review of the impacts associated with phosphorus loading for proposed project is an important part of the stormwater management plan.

As shown in section 2.2 of this report, a pollutant loading analysis for the proposed development has been completed using the "coefficient method" to meet the NYCDEP stormwater regulations. The pollutant loading analysis performed shows an overall reduction in phosphorus loads discharging from the site in the proposed condition. In addition to these calculations the New York State Watershed Inspector General has requested that the "Simple Method" be used to calculate phosphorus loading. The Simple Method, used in conjunction with the 1996 Terrene Institutes publication A *Watershed Approach to Urban Runoff*, is a site-specific method for determining pollutant loading. The following table summarizes the phosphorus loading calculations to each reservoir basin as shown in detail in Appendix F:

Middle Branch Reservoir Basin Annual Phosphorus Loading Summary (Simple Method)

Existing Annual Phosphorus Load to Middle Branch Reservoir **(Design Line 3)**	**30.90 lbs**
Proposed Annual Phosphorus Load to Middle Branch Reservoir **(Design Line 3)**	**23.24 lbs**
Net Reduction in Phosphorus Loading	**7.66 lbs**

East Branch Reservoir Basin Annual Phosphorus Loading Summary (Simple Method)

Existing Annual Phosphorus Load to East Branch Reservoir **(Design Point 1 & 2)**	**10.08 lbs**
Proposed Annual Phosphorus Load to East Branch Reservoir **(Design Point 1 & 2)**	**9.46 lbs**
Net Reduction in Phosphorus Loading	**0.62 lbs**

As shown in the above table, the phosphorus loading to each of the reservoir basins has been reduced in the proposed condition based on the requirements set forth by the New York State Watershed Inspector General. For detailed description of the simple method as well as the supporting calculations to each reservoir basin see Appendix F

The burden for reducing current phosphorous loading to achieve the TMDL presently lies with the Towns of Kent and Patterson and its regional partners. The program for phosphorous reduction has been established in the NYSDEC draft document entitled *New York City Watershed Croton Reservoir System Phase II Phosphorous TMDL Nonpoint Source Implementation Plan* (TMDL Implementation Plan). This plan clearly states that for simplicity and ease of local government administration the plan is largely structured to use existing programs to achieve phosphorous reductions. These programs include:

- NYSDEC SPDES General Permit for Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) Permit No. GP-02-02.
- Putnam and Westchester County "Croton Plans".
- NYCDEP "Croton Strategy".
- NYCDEP EOH Water Quality Investment Funds, including the Putnam County Septic Repair Program.

The subject project is consistent with the TMDL Implementation Plan and applicable portions of the above-cited programs. Based on the fact that the above analysis indicates a reduction in post development phosphorous, and the project's consistency with the TMDL Implementation Plan, it is clear that the project will not have any reservoir basin wide impacts, and the project will not impact either the Town of Kent or Patterson's ability to achieve the TMDL.

3.0 STORMWATER CONVEYANCE SYSTEM

The stormwater conveyance systems for the project consist of swales, drain inlets, and HDPE pipe. The systems will be sized utilizing the Rational Method. The Rational Method is a standard method used by engineers to develop flow rates for sizing conveyance systems. The Rational Method calculates flows based on a one-hour design storm. The conveyance systems will be sized to convey, at a minimum, the 100-year design storm.

4.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control will be accomplished by four basic principles: diversion of clean water, containment of sediment, treatment of dirty water, and stabilization of disturbed areas. Diversion of clean water will be accomplished with swales. This diverted water will be safely conveyed around the construction area as necessary and discharged downstream of the disturbed areas. Sediment will be contained with the use of silt fence at the toe of disturbed slopes and excavation of temporary sediment basins. Disturbed areas will be permanently stabilized within 14 days of final grading to limit the required length of time that the temporary facilities must be utilized.

4.1 Temporary Erosion and Sediment Control Facilities

Temporary erosion and sediment control facilities will be installed and maintained as required to reduce the impacts to off-site properties. In general, the following temporary methods and materials will be used to control erosion and sedimentation from the project site:

- Stabilized Construction Entrance
- Diversion Swales
- Silt Fence Barriers
- Stone Check Dams
- Storm Drain Inlet Protection
- Sediment Basins

A stabilized construction entrance will be installed at the entrance to the site as shown on the plan. The design drawings will include details to guide the contractor in the construction of this entrance. The intent of the stabilized construction entrance is to prevent the "tracking" of soil from the site. Dust control will be accomplished with water sprinkling trucks if required. During dry periods, sprinkler trucks will wet all exposed earth surfaces as required to prevent the transport of air-borne particles to adjoining properties.

Stormwater from areas uphill of the subject development area will be diverted. During construction stormwater from areas of disturbance will be diverted through the use of grass swales to other practices such as filter barriers and/or sediment basins. Stone check dams will be installed in the grass swales to reduce runoff velocities and filter sediment picked up from the swale's bottom.

Siltation barriers constructed of geosynthetic filter cloth will be installed liberally at the toe of all disturbed slopes. The intent of these barriers is to contain silt and sediment at the source and inhibit its transport by stormwater runoff. The siltation barriers will also help reduce the rate of runoff by creating numerous filters through which the stormwater must pass. Siltation barriers will also be installed around catch basins and drain inlets. The intent of these barriers is to prevent silt and sedimentation from entering the stormwater collection system.

The stormwater ponds will also act as temporary sediment basins during construction of the site. Most stormwater runoff from disturbed areas will be directed to the sediment basins. These basins will be sized in accordance with the publication, *New York State Standards and Specifications for Erosion and Sediment Control* (Blue Book).

In addition to the temporary sediment and erosion control measures listed above, pollution prevention measures on the site will also be accomplished by the use of dumpsters. All waste and scrap building materials on site shall be disposed of in a dumpster, with no waste being buried or improperly discarded. The site should be cleaned daily of all site litter and construction debris. Portable toilets will be provided on site during construction for waste management. No construction chemicals are anticipated to be used or stored on site during and after construction.

4.2 Permanent Erosion and Sediment Control Facilities

Permanent erosion and sediment control will be accomplished by diverting stormwater runoff from steep slopes, controlling/reducing stormwater runoff velocities and volumes, and vegetative and structural surface stabilization. All of the permanent facilities are relatively maintenance free and only require periodic inspections.

The temporary sediment basins will be cleaned of all sediment and debris, excavated to their final elevations and dimensions and stabilized with the vegetation as indicated on the plans. Riprap aprons will be used at the discharge end of all piped drainage systems. Runoff velocities will be reduced to levels that are non-erosive to the receiving waterbodies through use of these aprons.

Other than the actual buildings and driveway / parking surfaces, the primary method for permanently stabilizing disturbed surfaces at the subject site is with vegetation. The vegetation will control stormwater runoff by preventing soil erosion, reducing runoff volume and velocities, and providing a filter medium. Permanent seeding should optimally be undertaken in the spring from March 21st through May 20thand in late summer from August 15th to October 15th. Theses dates are only to be used as a guide; other methods of seeding may be used during different times of the year. The stormwater basins will allow for settlement of suspended sediment that is generated by stormwater runoff from the site. These facilities provide a central collection area for sediment deposition and eventual disposal.

5.0 IMPLEMENTATION AND MAINTENANCE

5.1 Construction Phase

Details associated with the implementation and maintenance of the proposed stormwater facilities and erosion control measures during construction has been shown on the project plans. A construction sequence has been provided to guide the contractor in the installation of the erosion control measures as well as the site plan features. The erosion control plan includes associated details and notes to aid the contractor in implementing the plan. The developer will be responsible for the implementation and maintenance of the proposed stormwater facilities and erosion control measures during construction.

During construction a Site Log Book, Appendix E of this report, is required to be kept per NYSDEC SPDES General Permit GP-02-01. Erosion and sediment control inspections are required to be conducted as necessary under coverage of the permit (minimum once a week) and an updated logbook is required to be kept on site for the duration of the construction activities. The Construction Site Log Book is an appendix taken from the *New York State Standards and Specifications for Erosion and Sediment Control* (Blue Book).

5.2 Long Term Maintenance Plan

The stormwater facilities for the subject project have been designed to minimize the required maintenance. This section discusses the minimum maintenance requirements to insure long-term performance of the stormwater facilities. Initially the stormwater facilities will require an increased maintenance and inspection schedule until all portions of the site are stable. Generally the stormwater facilities consist of either collection/conveyance components or treatment components.

The stormwater collection and conveyance systems are composed of concrete drain inlets with cast iron frames and grates, high-density polyethylene pipe, and grass and rip rap swales. Minimal maintenance is typically required for these facilities. Each spring the paved areas will be cleaned to remove the winter's accumulation of traction sand. After this is completed, all drain inlets sumps will be cleaned. All pipes will be checked for debris and blockages and cleaned as required. During the cleaning process, the drain inlets and pipes will be inspected for structural integrity and overall condition; repairs and/or replacement will be made as required. Swales will be inspected for debris, blockages and erosion and shall be cleaned and repaired as required.

The stormwater ponds have been designed to limit the routine maintenance requirements. Initially the basins will require regular maintenance until the permanent vegetation is established. Permanent vegetation is considered established when 80% of the final plant density is established. Vegetation should be inspected weekly and after every 0.5" of rain as part of coverage under NYSDEC SPDES General Permit GP-02-01 during construction and in the permanent condition inspections should take place on a quarterly basis and after larger storm events. Damaged areas should be immediately re-seeded and re-mulched. The floor of the ponds will be planted with a seed mixture that contains plants that are tolerant of occasional flooding. The seed mixtures contain several plant species that vary slightly in their needs for survival. It is expected that not all of the species will survive within each basin due to variations within each basin such as water, nutrients, and light. During the initial year of planting, the plants may require watering to germinate and become established. Note that several seedings may be required during the first year to completely establish vegetation within the ponds. After the initial year of establishment, the ponds do not need to be fertilized or watered. A natural selection process will occur over the first few years, such that the species within the seed mixture most suitable to the conditions will survive.

Once the desired vegetative cover is established in the ponds, only limited maintenance is required. The basins and outlet structures should be inspected after major storm events and semi-annually. During the inspections, the following should be checked:

- Evidence of clogging of outlet structure.
- Erosion of the flow path through the pond.
- Subsidence, erosion, cracking or tree growth on the embankment/berm.
- Condition of the emergency spillway.
- Accumulation of sediment around the outlet structure.
- Adequacy of upstream/downstream channel erosion control measures.
- Erosion of the basin bed and banks.
- Sources of erosion in the contributory drainage, which should be stabilized.

Access to the ponds will be through stabilized pond access drives. The access drives are proposed to be graded to final grades and seeded and mulched in accordance with the Erosion & Sedimentation Control Notes. The grass swales, the graded pond access drives, and the side slopes and berms of the ponds should be mowed annually to prevent the establishment of woody plants within the swales, accesses, or pond berms. The bottoms of the ponds should not be mowed. During the mowing operations, debris and litter should be removed from all parts of the swales, accesses, and ponds. Accumulated sediment will need to be removed from the swales and ponds approximately every 10 to 20 years, or when 50 percent of their capacity has been reached. Sediment markers may be required within the ponds and forebays to indicate when sediment is to be removed from the stormwater practices.

APPENDIX A

Pre-Development Computer Data



Subcat Reach Pond Link

Drainage Diagram for Patterson Crossing Pre Development

Prepared by Insite Engineering, Surveying, & Landscape Architecture P.C. 1/24/2008

HydroCAD® 7.10 s/n 000891 © 2005 HydroCAD Software Solutions LLC

Subcatchment PRE 1:

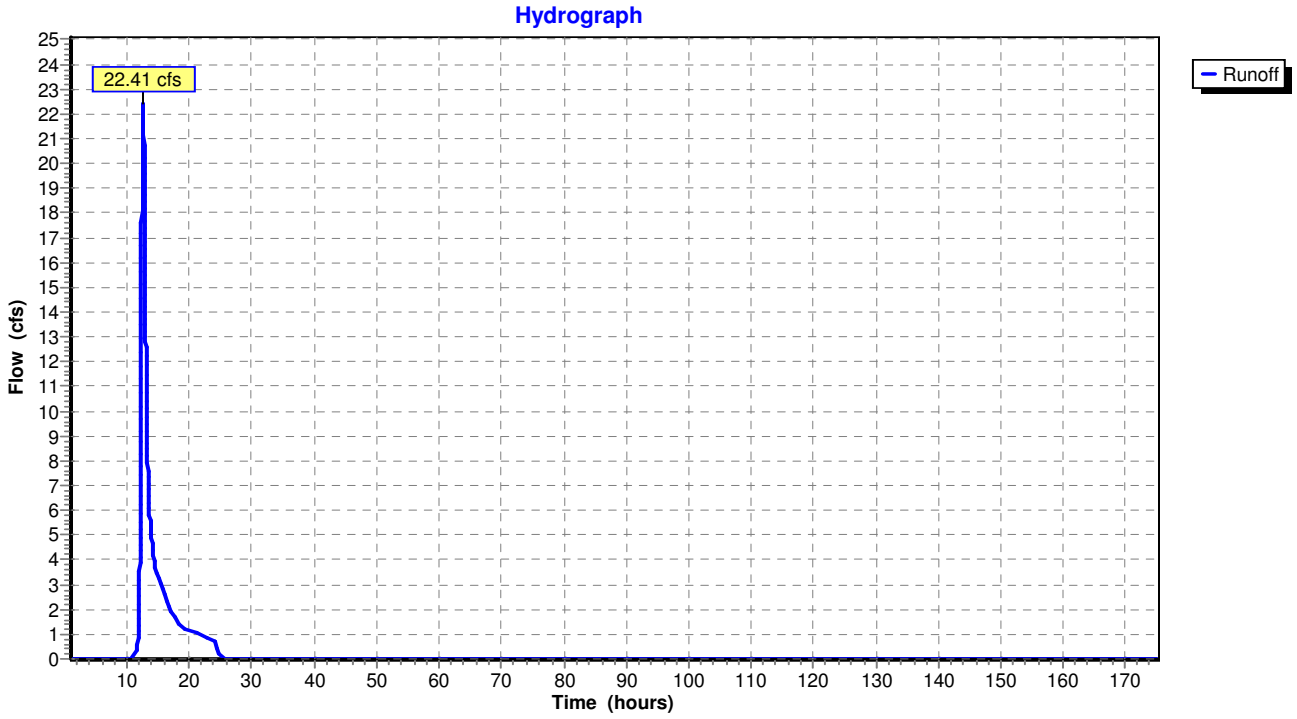
Runoff = 22.41 cfs @ 12.56 hrs, Volume= 3.369 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
33.500	70	Woods, Good, HSG C
4.500	79	1 acre lots, 20% imp, HSG C
38.000	71	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.5	380	0.0800	1.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.5	380	0.1300	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.6	980	0.0500	1.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	340	0.0350	5.6	8.35	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00' n= 0.025 Earth, clean & winding
37.8	2,180	Total			

Subcatchment PRE 1:



Subcatchment PRE 2:

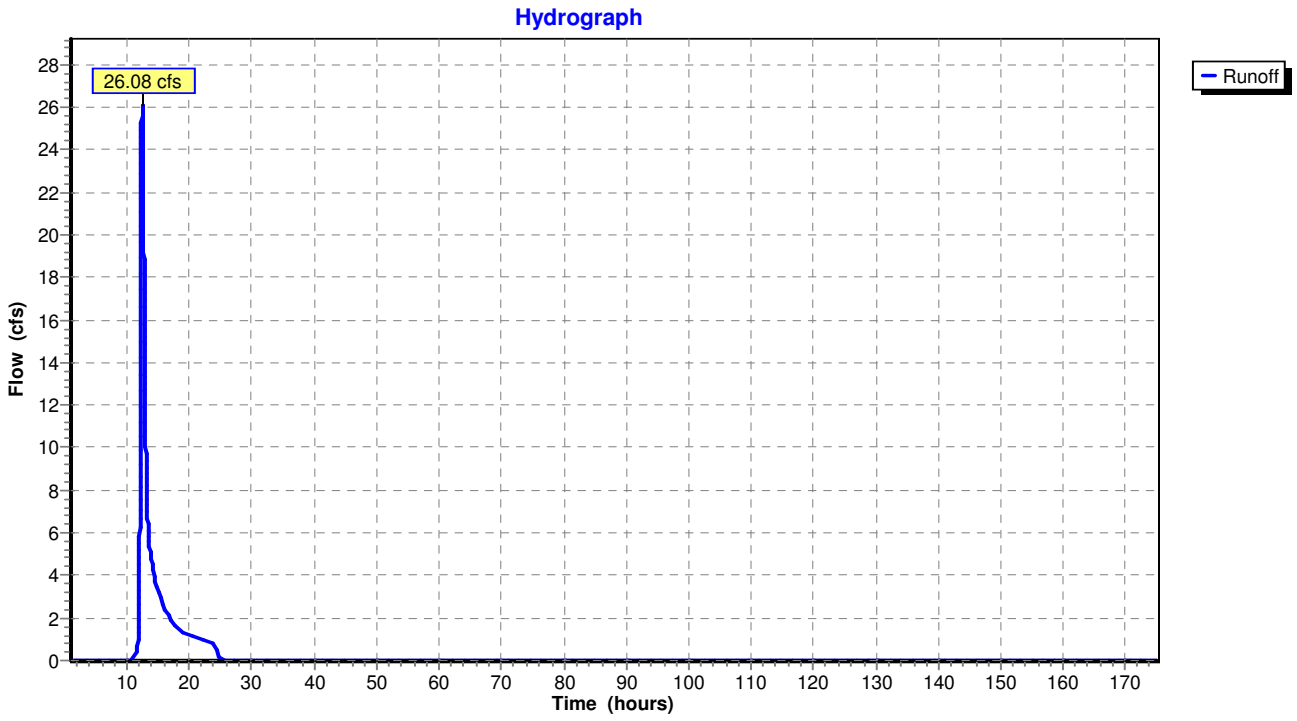
Runoff = 26.08 cfs @ 12.43 hrs, Volume= 3.461 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
41.200	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.2	360	0.1400	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.0	900	0.0900	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	550	0.1700	12.7	12.73	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=0.50' Z= 2.0 '/' Top.W=3.00' n= 0.022 Earth, clean & straight
28.1	1,910	Total			

Subcatchment PRE 2:



Subcatchment PRE 3:

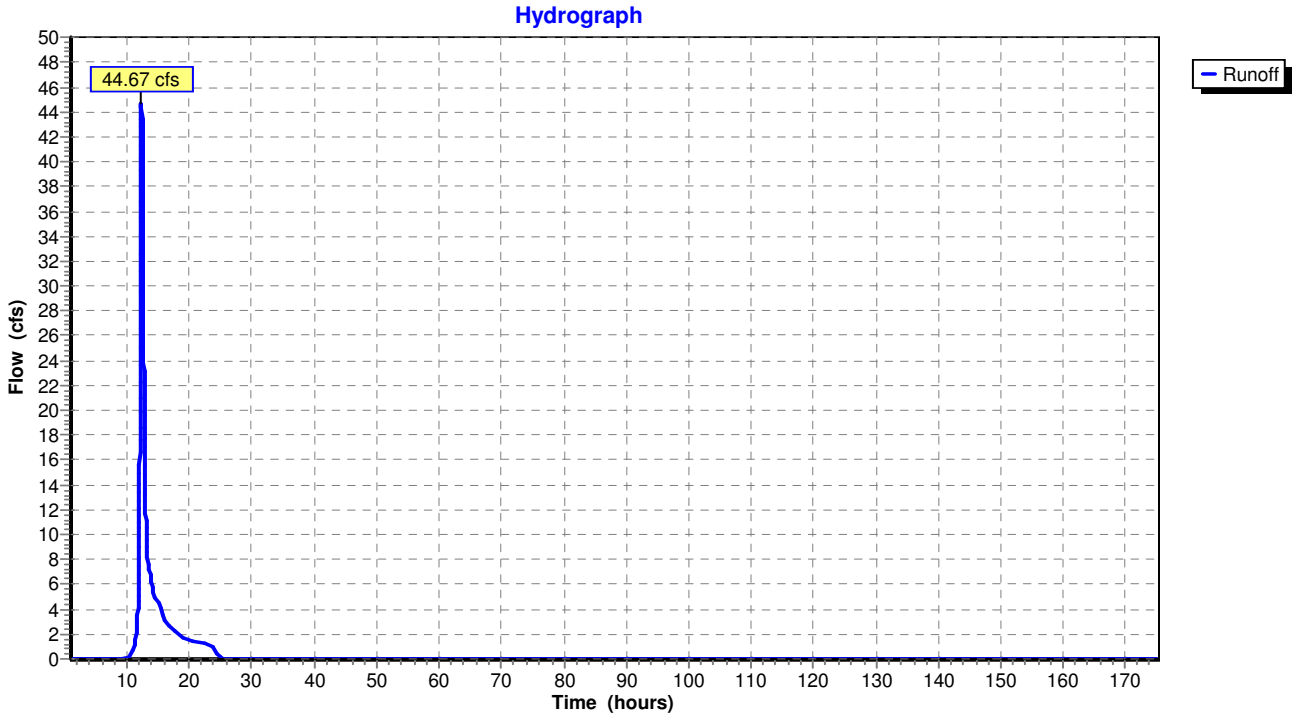
Runoff = 44.67 cfs @ 12.33 hrs, Volume= 5.120 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
25.400	70	Woods, Good, HSG C
6.500	98	Paved parking & roofs
2.800	79	1 acre lots, 20% imp, HSG C
12.500	74	>75% Grass cover, Good, HSG C
47.200	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.7	450	0.1000	1.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	450	0.1500	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	350	0.0400	8.7	42.66	**Circular Channel (pipe),** Diam= 30.0" Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.025 Corrugated metal
22.5	1,350	Total			

Subcatchment PRE 3:



Subcatchment PRE 1:

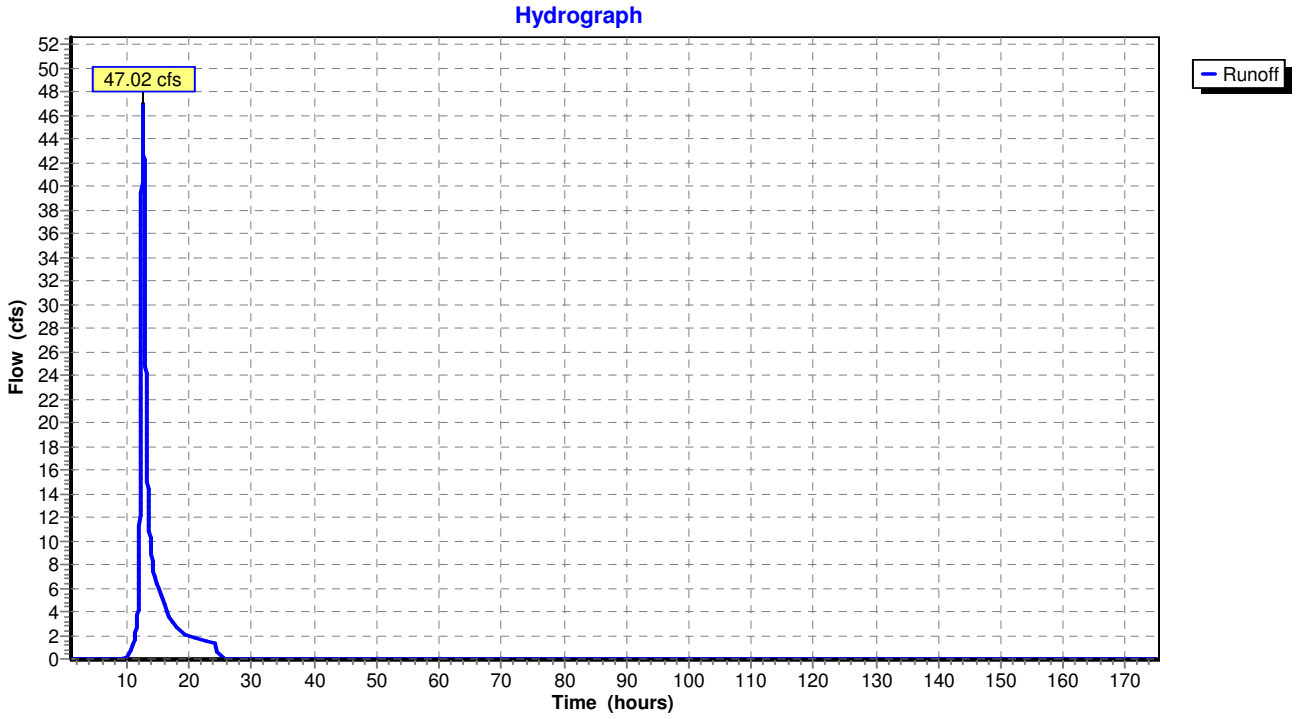
Runoff = 47.02 cfs @ 12.56 hrs, Volume= 6.702 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
33.500	70	Woods, Good, HSG C
4.500	79	1 acre lots, 20% imp, HSG C
38.000	71	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.5	380	0.0800	1.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.5	380	0.1300	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.6	980	0.0500	1.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	340	0.0350	5.6	8.35	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00' n= 0.025 Earth, clean & winding
37.8	2,180	Total			

Subcatchment PRE 1:



Subcatchment PRE 2:

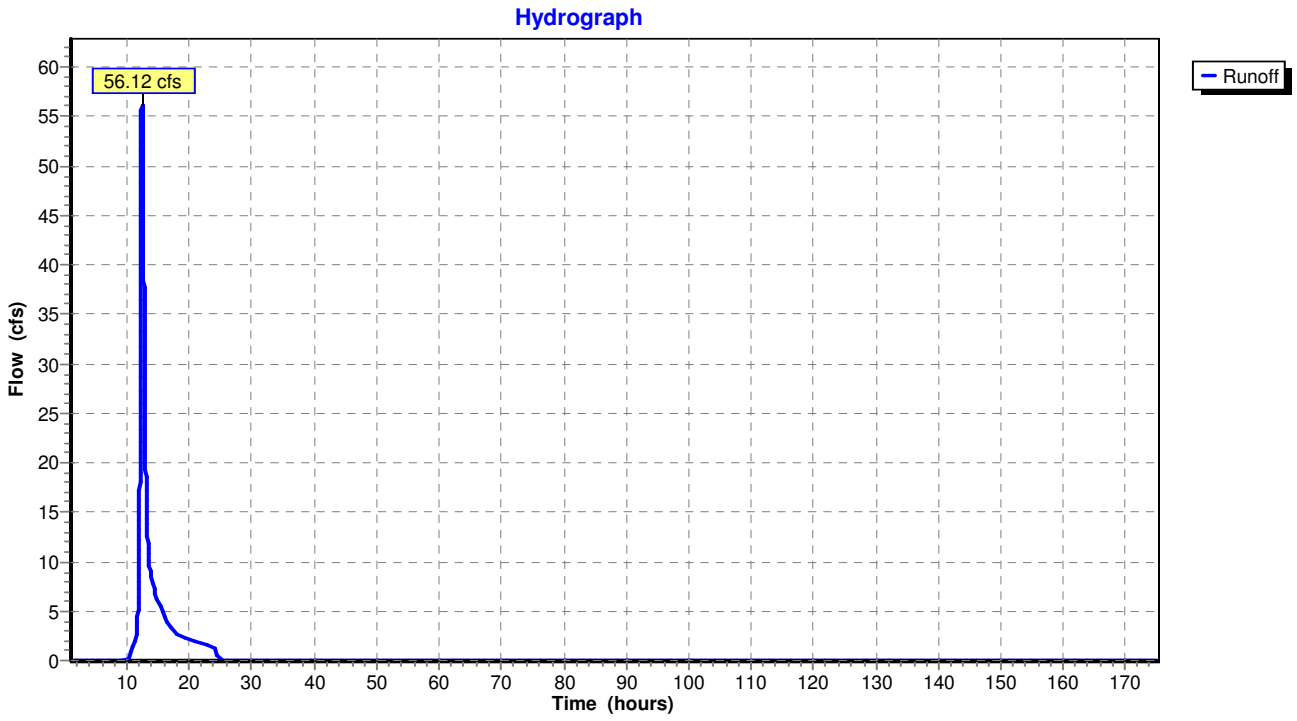
Runoff = 56.12 cfs @ 12.40 hrs, Volume= 6.991 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
41.200	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.2	360	0.1400	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.0	900	0.0900	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	550	0.1700	12.7	12.73	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=0.50' Z= 2.0 '/' Top.W=3.00' n= 0.022 Earth, clean & straight
28.1	1,910	Total			

Subcatchment PRE 2:



Subcatchment PRE 3:

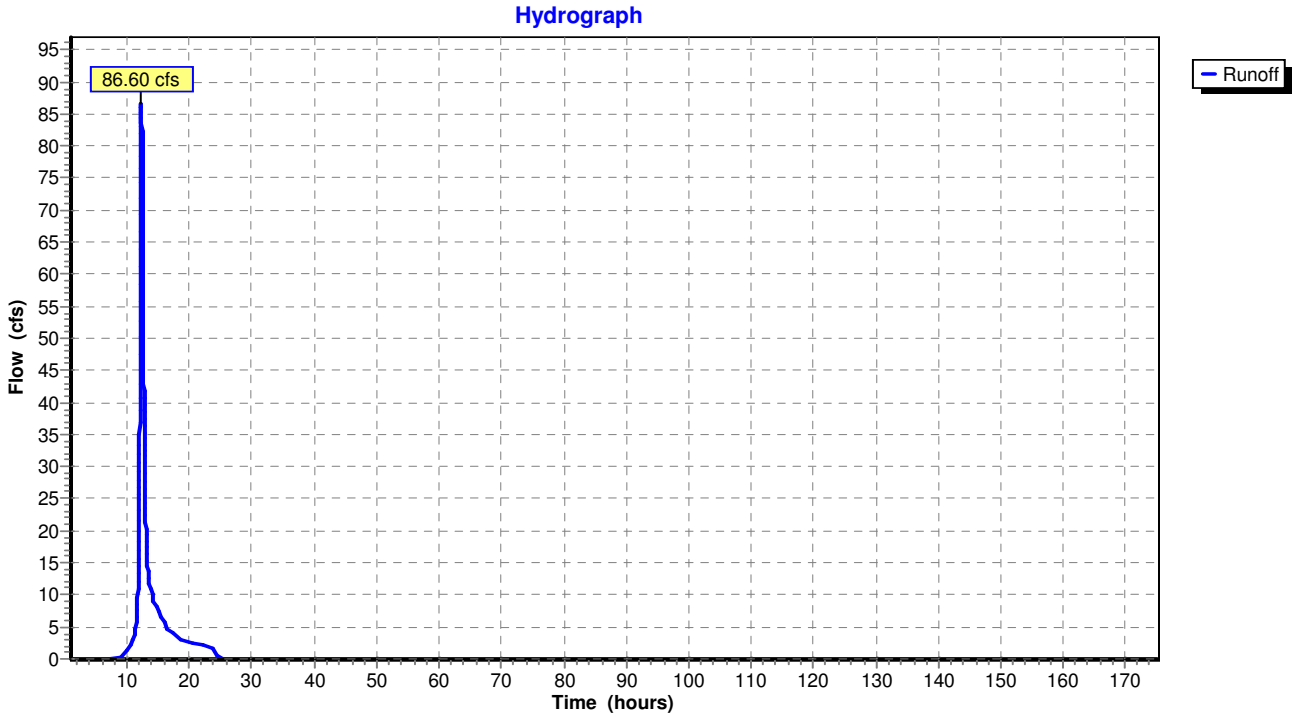
Runoff = 86.60 cfs @ 12.32 hrs, Volume= 9.634 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
25.400	70	Woods, Good, HSG C
6.500	98	Paved parking & roofs
2.800	79	1 acre lots, 20% imp, HSG C
12.500	74	>75% Grass cover, Good, HSG C
47.200	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.7	450	0.1000	1.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	450	0.1500	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	350	0.0400	8.7	42.66	**Circular Channel (pipe),** Diam= 30.0" Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.025 Corrugated metal
22.5	1,350	Total			

Subcatchment PRE 3:



Subcatchment PRE 1:

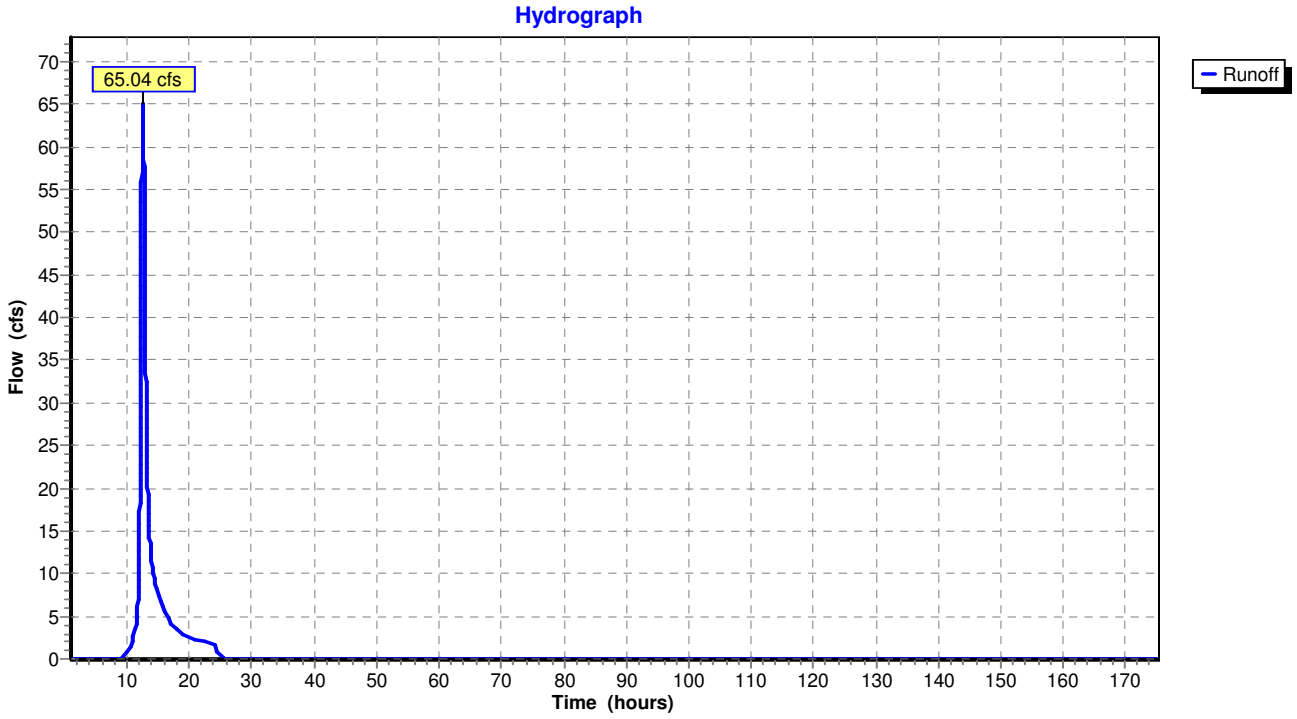
Runoff = 65.04 cfs @ 12.55 hrs, Volume= 9.179 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
33.500	70	Woods, Good, HSG C
4.500	79	1 acre lots, 20% imp, HSG C
38.000	71	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.5	380	0.0800	1.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.5	380	0.1300	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.6	980	0.0500	1.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	340	0.0350	5.6	8.35	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00' n= 0.025 Earth, clean & winding
37.8	2,180	Total			

Subcatchment PRE 1:



Subcatchment PRE 2:

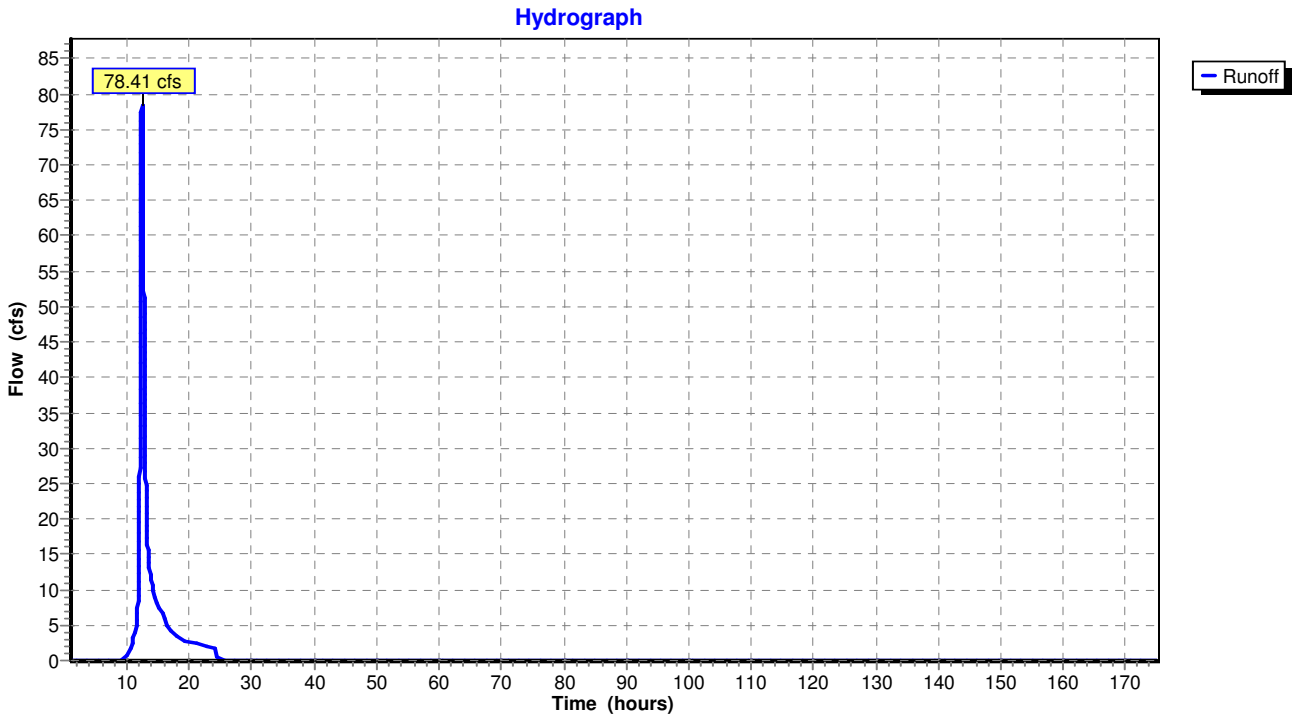
Runoff = 78.41 cfs @ 12.40 hrs, Volume= 9.631 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
41.200	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.2	360	0.1400	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.0	900	0.0900	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	550	0.1700	12.7	12.73	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=0.50' Z= 2.0 '/' Top.W=3.00' n= 0.022 Earth, clean & straight
28.1	1,910	Total			

Subcatchment PRE 2:



Subcatchment PRE 3:

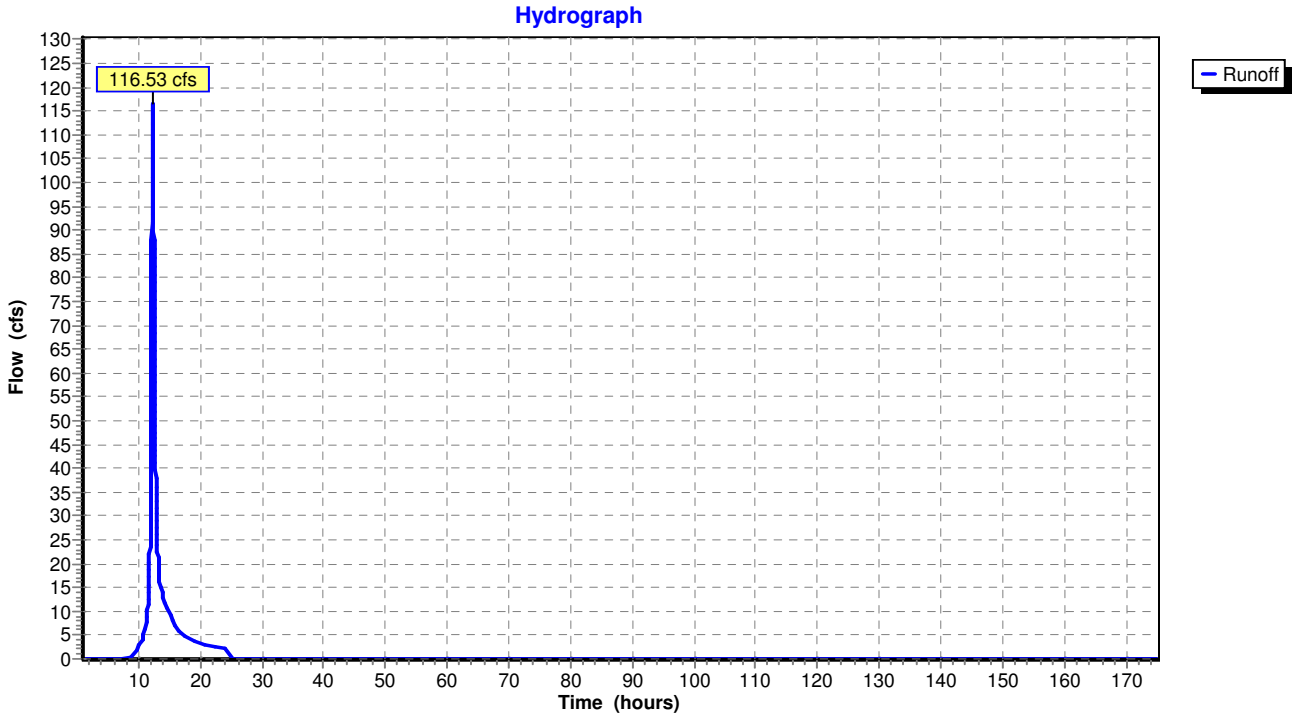
Runoff = 116.53 cfs @ 12.32 hrs, Volume= 12.909 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
25.400	70	Woods, Good, HSG C
6.500	98	Paved parking & roofs
2.800	79	1 acre lots, 20% imp, HSG C
12.500	74	>75% Grass cover, Good, HSG C
47.200	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.7	450	0.1000	1.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	450	0.1500	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	350	0.0400	8.7	42.66	**Circular Channel (pipe),** Diam= 30.0" Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.025 Corrugated metal
22.5	1,350	Total			

Subcatchment PRE 3:



Subcatchment PRE 1:

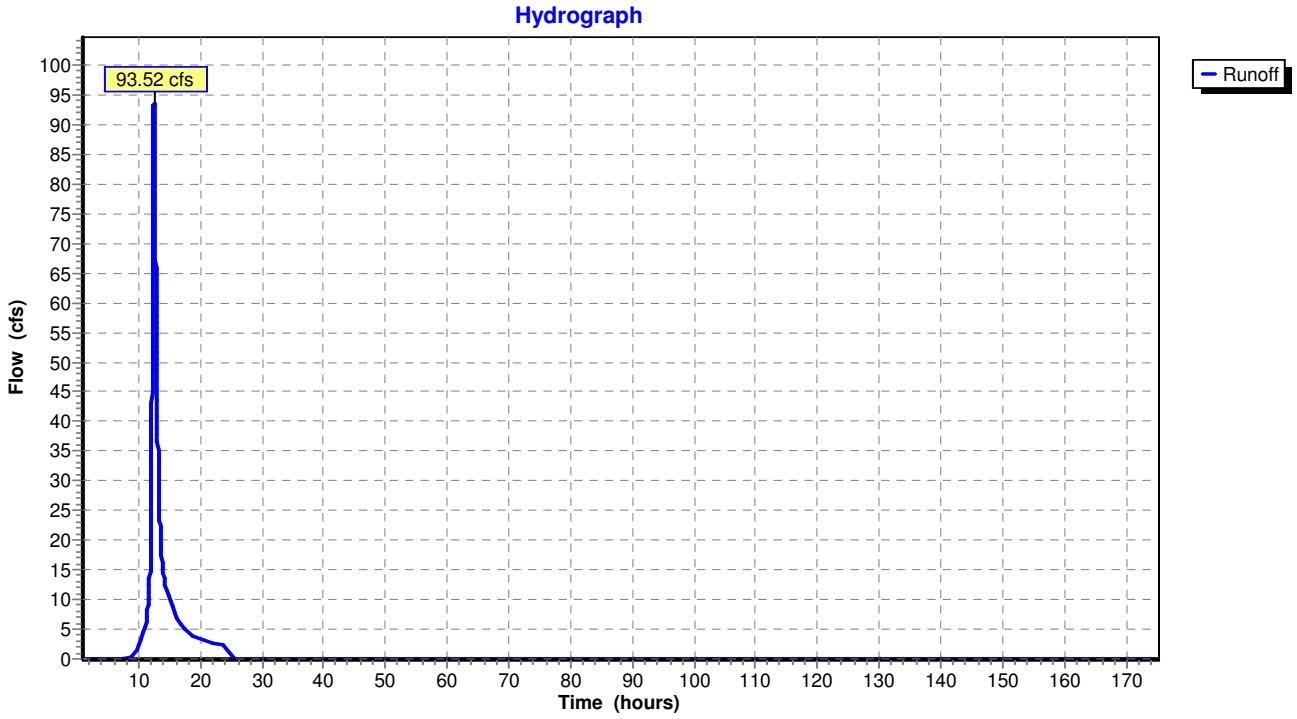
Runoff = 93.52 cfs @ 12.52 hrs, Volume= 13.135 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
33.500	70	Woods, Good, HSG C
4.500	79	1 acre lots, 20% imp, HSG C
38.000	71	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.5	380	0.0800	1.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.5	380	0.1300	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.6	980	0.0500	1.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	340	0.0350	5.6	8.35	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00' n= 0.025 Earth, clean & winding
37.8	2,180	Total			

Subcatchment PRE 1:



Subcatchment PRE 2:

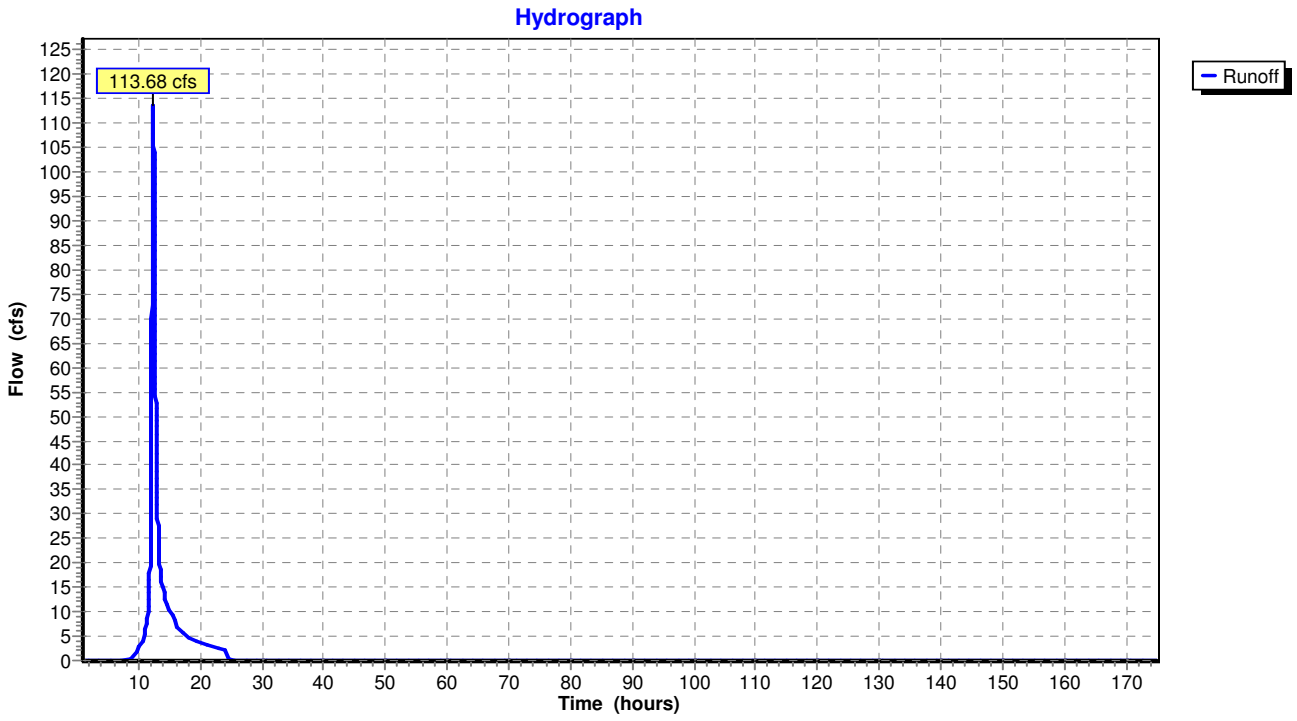
Runoff = 113.68 cfs @ 12.40 hrs, Volume= 13.863 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
41.200	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.2	360	0.1400	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.0	900	0.0900	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	550	0.1700	12.7	12.73	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=0.50' Z= 2.0 '/' Top.W=3.00' n= 0.022 Earth, clean & straight
28.1	1,910	Total			

Subcatchment PRE 2:



Subcatchment PRE 3:

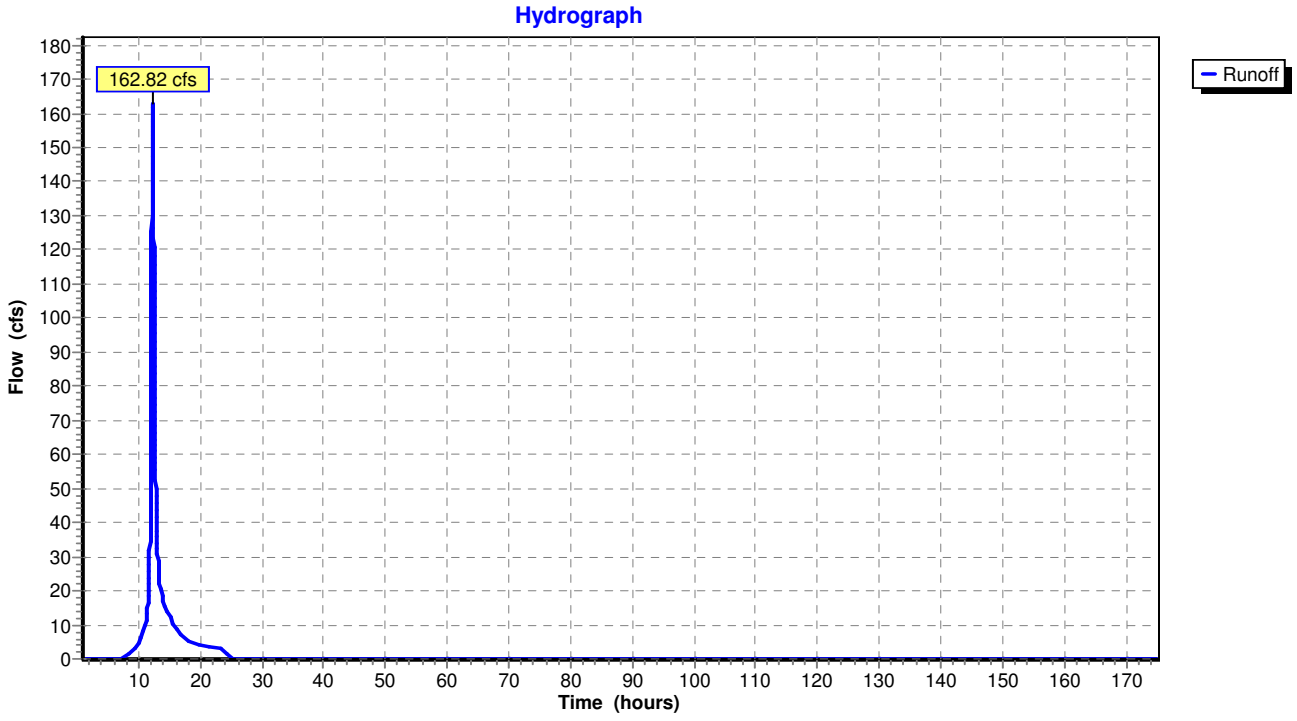
Runoff = 162.82 cfs @ 12.31 hrs, Volume= 18.065 af, Depth= 4.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
25.400	70	Woods, Good, HSG C
6.500	98	Paved parking & roofs
2.800	79	1 acre lots, 20% imp, HSG C
12.500	74	>75% Grass cover, Good, HSG C
47.200	75	Weighted Average

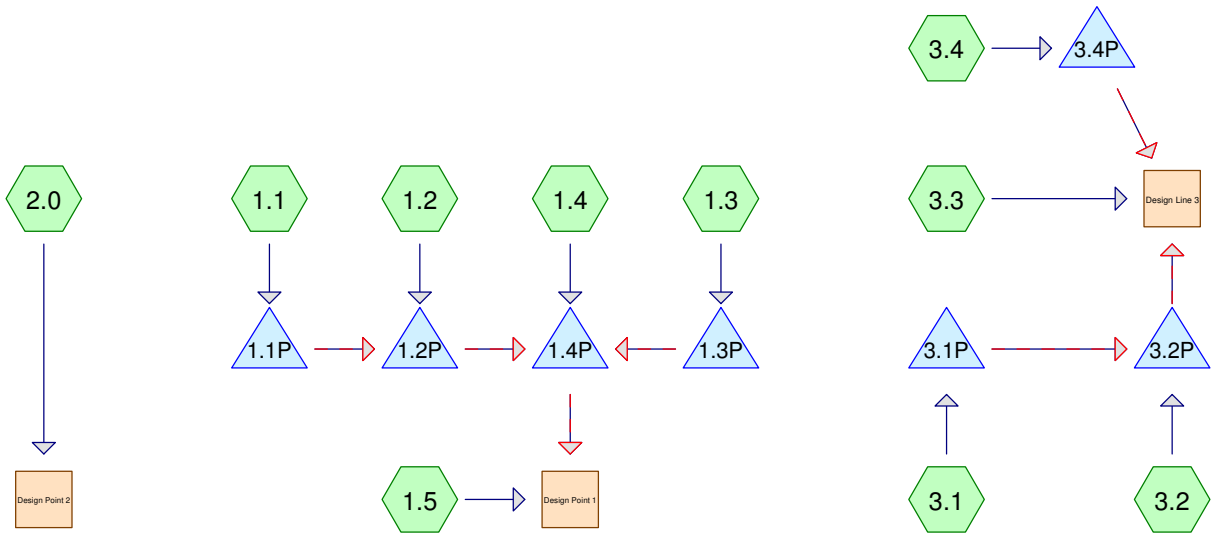
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.7	450	0.1000	1.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	450	0.1500	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	350	0.0400	8.7	42.66	**Circular Channel (pipe),** Diam= 30.0" Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.025 Corrugated metal
22.5	1,350	Total			

Subcatchment PRE 3:



APPENDIX B

Post-Development Computer Data



Subcat Reach Pond Link

Drainage Diagram for Patterson Crossing Post Development

Prepared by Insite Engineering, Surveying, & Landscape Acrhitecture P.C. 12/11/2007

HydroCAD® 7.10 s/n 000891 © 2005 HydroCAD Software Solutions LLC

Subcatchment 1.1:

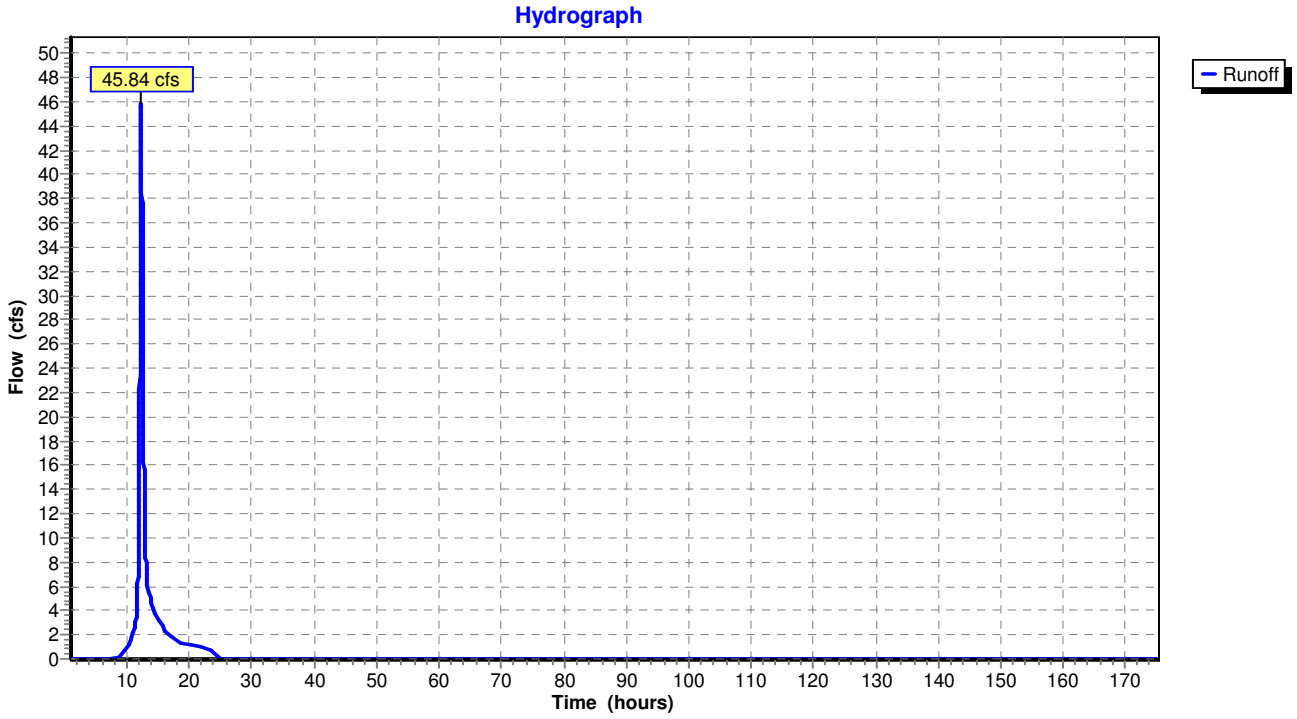
Runoff = 45.84 cfs @ 12.25 hrs, Volume= 4.632 af, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
23.000	94	Suburban Shopping Center
1.300	70	Woods, Good, HSG C
1.500	79	1 acre lots, 20% imp, HSG C
9.700	74	>75% Grass cover, Good, HSG C
35.500	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.6	610	0.1000	2.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	100	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	1,200	0.0330	13.1	41.10	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
18.1	2,010	Total			

Subcatchment 1.1:



Subcatchment 1.2:

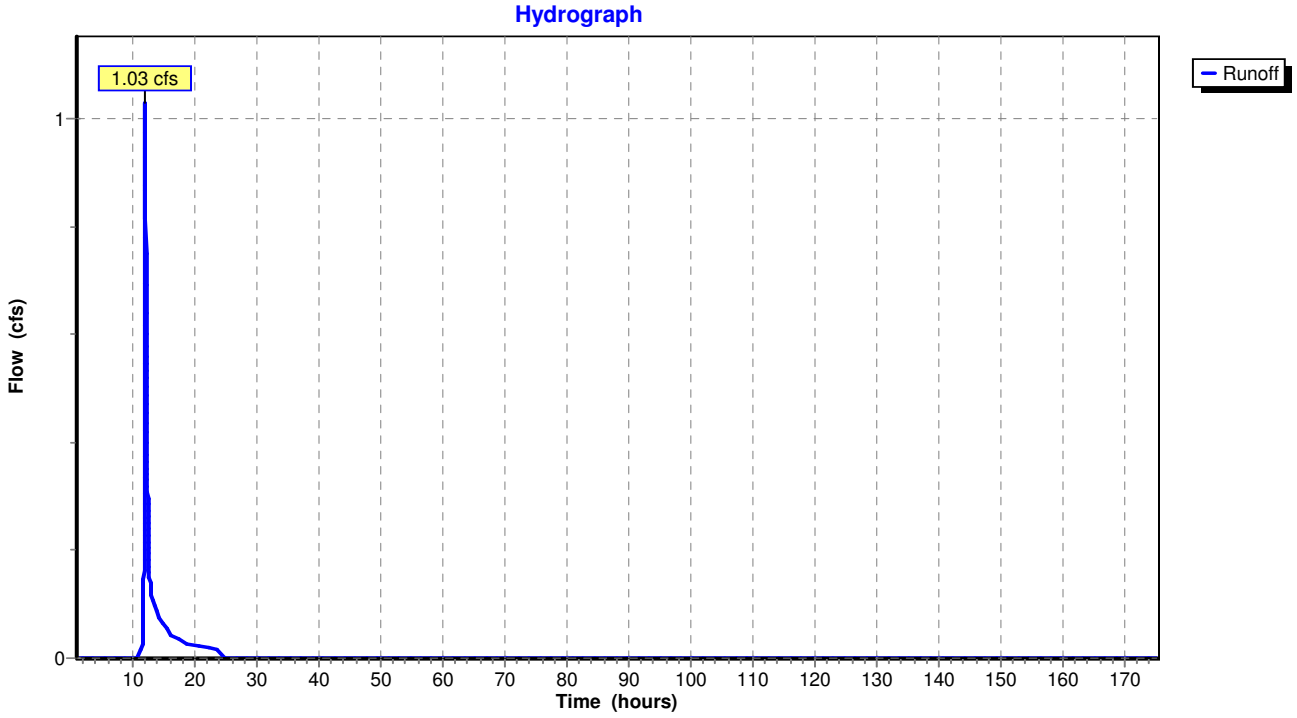
Runoff = 1.03 cfs @ 12.06 hrs, Volume= 0.072 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
1.100	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	60	0.3000	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.2:



Subcatchment 1.3:

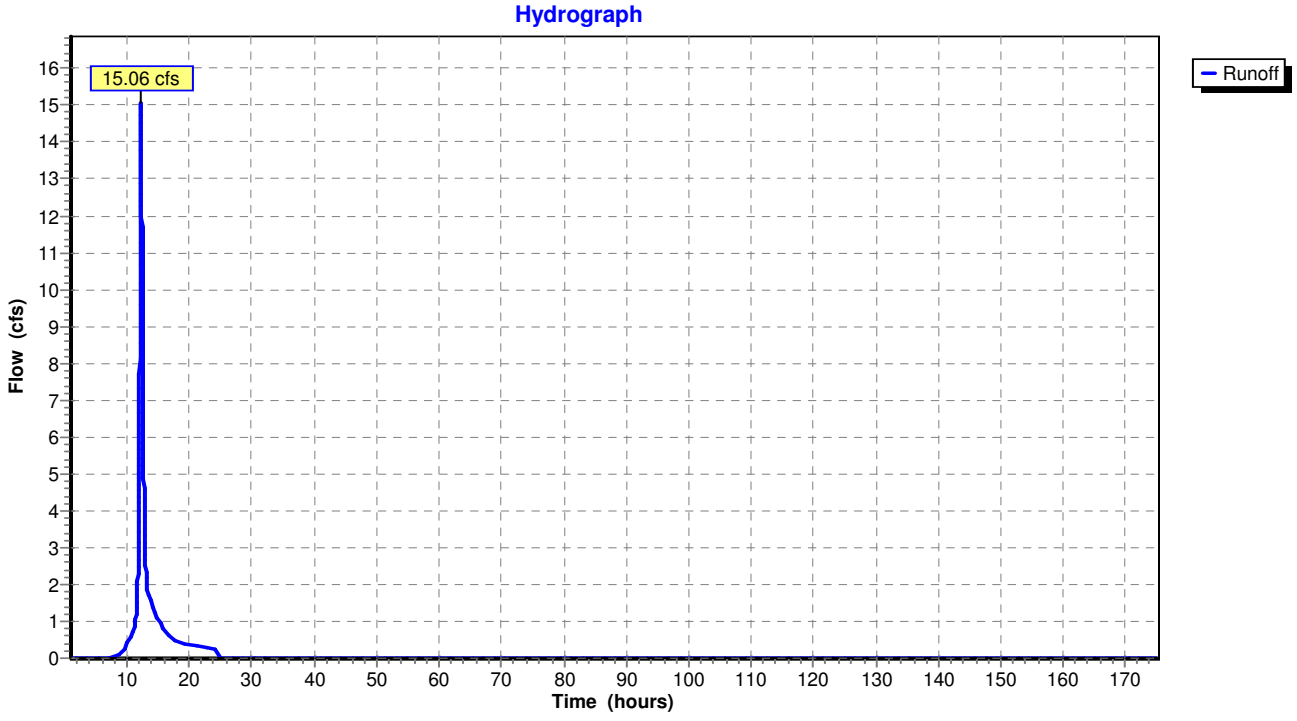
Runoff = 15.06 cfs @ 12.23 hrs, Volume= 1.491 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
7.400	94	Suburban Shopping Center
1.700	79	1 acre lots, 20% imp, HSG C
1.800	74	>75% Grass cover, Good, HSG C
10.900	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
7.6	875	0.0750	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	800	0.0250	11.4	35.77	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
17.1	1,775	Total			

Subcatchment 1.3:



Subcatchment 1.4:

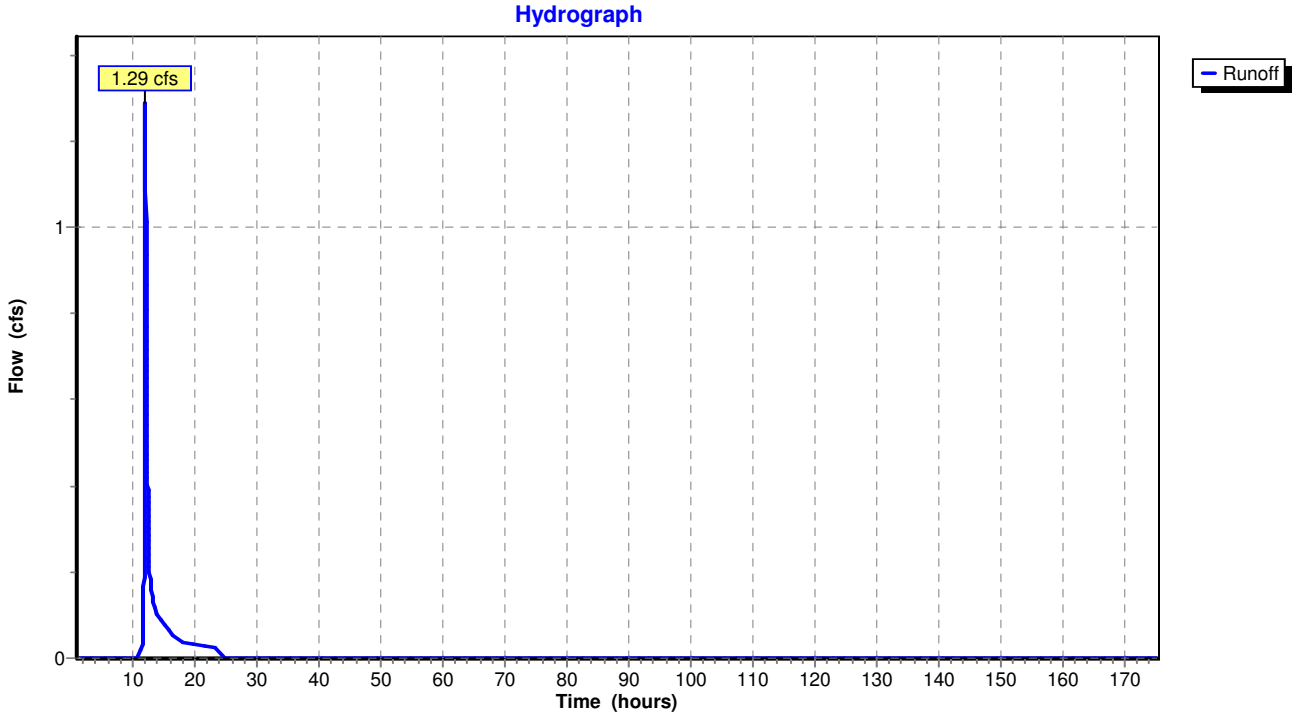
Runoff = 1.29 cfs @ 12.06 hrs, Volume= 0.091 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
1.400	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	70	0.2800	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.4:



Subcatchment 1.5:

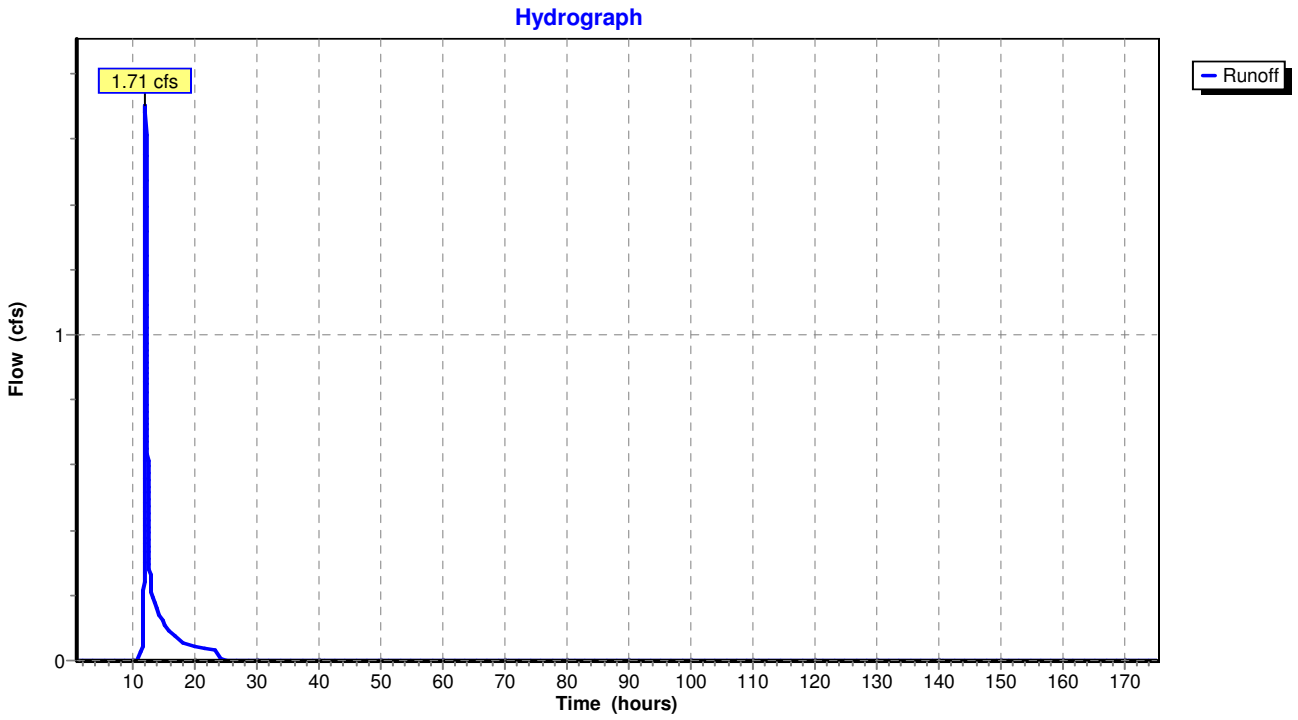
Runoff = 1.71 cfs @ 12.09 hrs, Volume= 0.131 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
2.000	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	53	0.0400	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	850	0.0200	11.0	176.03	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.0 '/' Top.W=12.00' n= 0.022 Earth, clean & straight
5.6	903	Total			

Subcatchment 1.5:



Subcatchment 2.0:

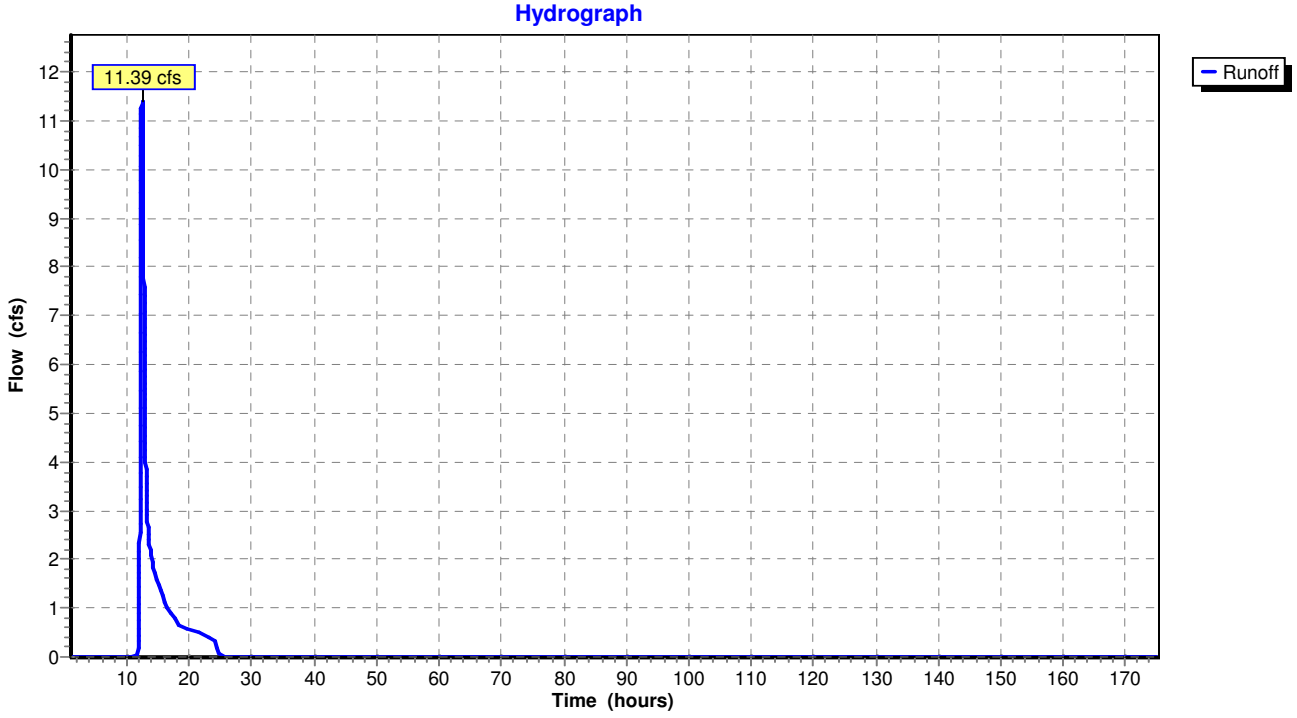
Runoff = 11.39 cfs @ 12.40 hrs, Volume= 1.505 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
16.000	70	Woods, Good, HSG C
10.100	74	>75% Grass cover, Good, HSG C
26.100	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.4	1,500	0.1400	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	170	0.0600	17.6	55.41	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
25.2	1,770	Total			

Subcatchment 2.0:



Subcatchment 3.1:

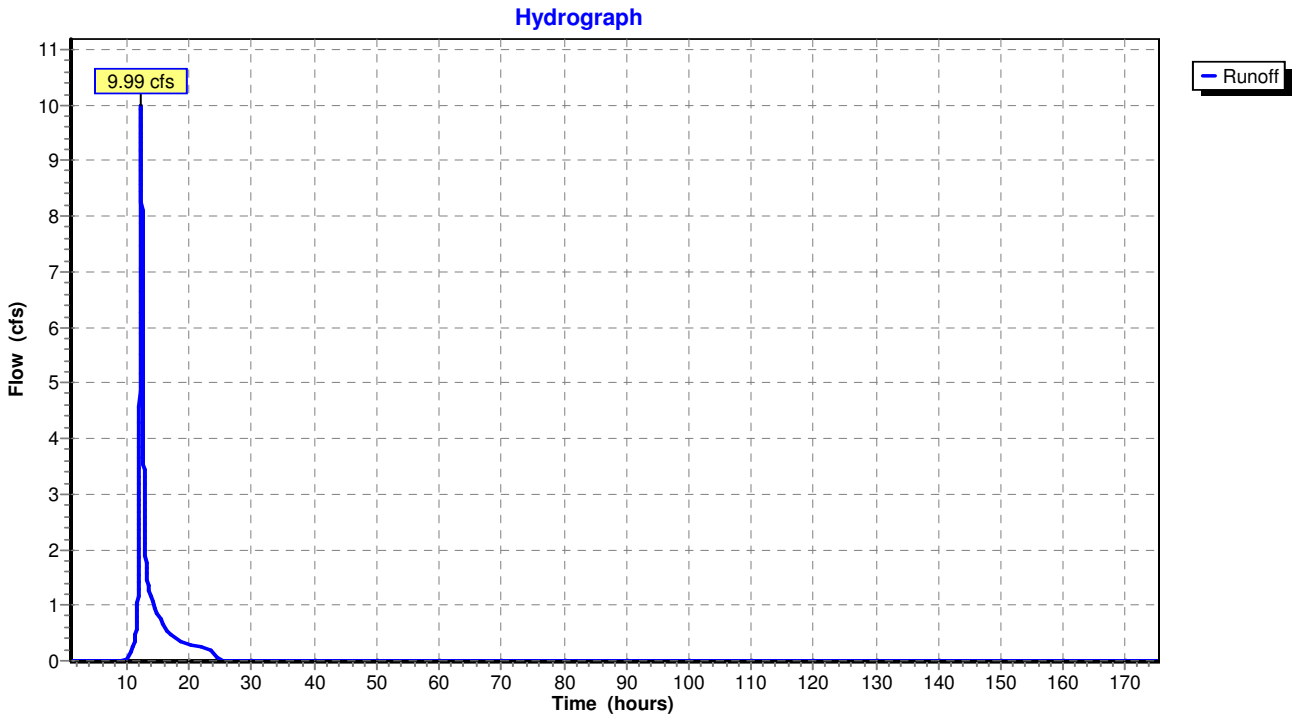
Runoff = 9.99 cfs @ 12.24 hrs, Volume= 1.007 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
3.800	94	Suburban Shopping Center
3.500	70	Woods, Good, HSG C
1.800	74	>75% Grass cover, Good, HSG C
1.300	79	1 acre lots, 20% imp, HSG C
10.400	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
8.7	1,100	0.0900	2.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	1,200	Total			

Subcatchment 3.1:



Subcatchment 3.2:

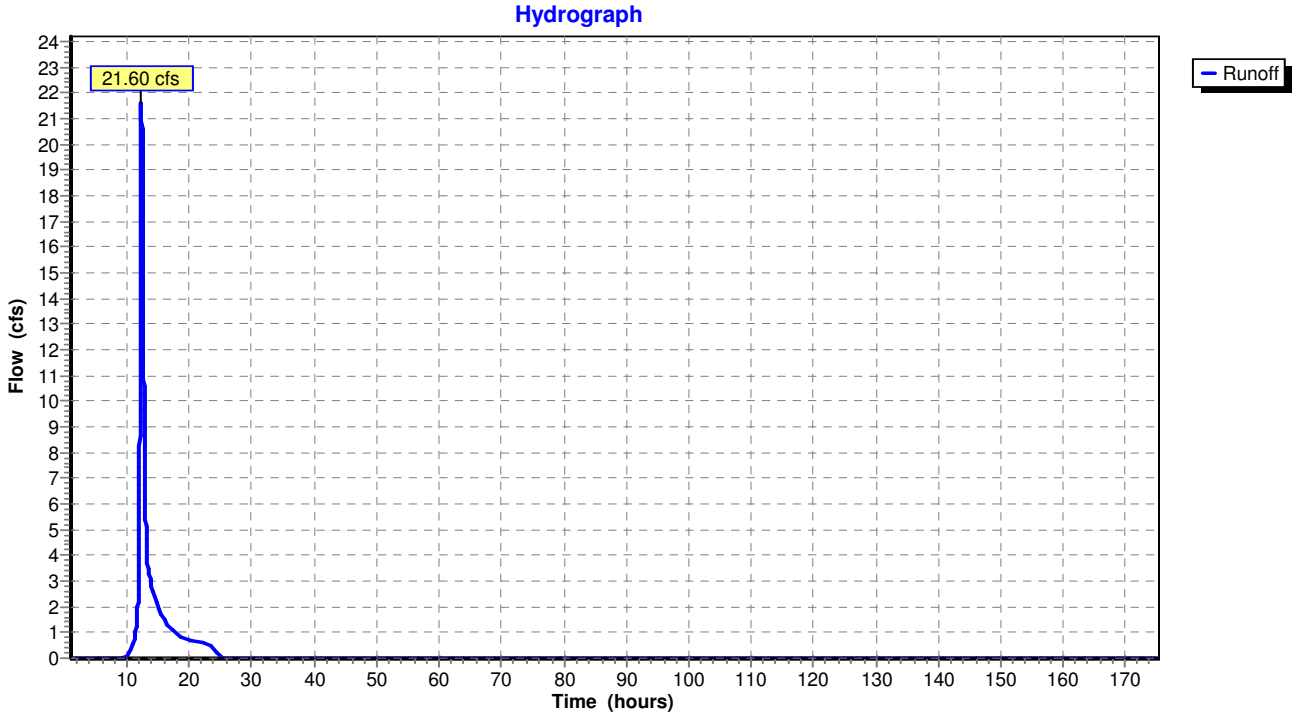
Runoff = 21.60 cfs @ 12.32 hrs, Volume= 2.420 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
1.000	70	Woods, Good, HSG C
7.500	98	Paved parking & roofs
16.500	74	>75% Grass cover, Good, HSG C
25.000	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
9.6	700	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	800	0.0500	16.1	50.59	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
22.0	1,600	Total			

Subcatchment 3.2:



Subcatchment 3.3:

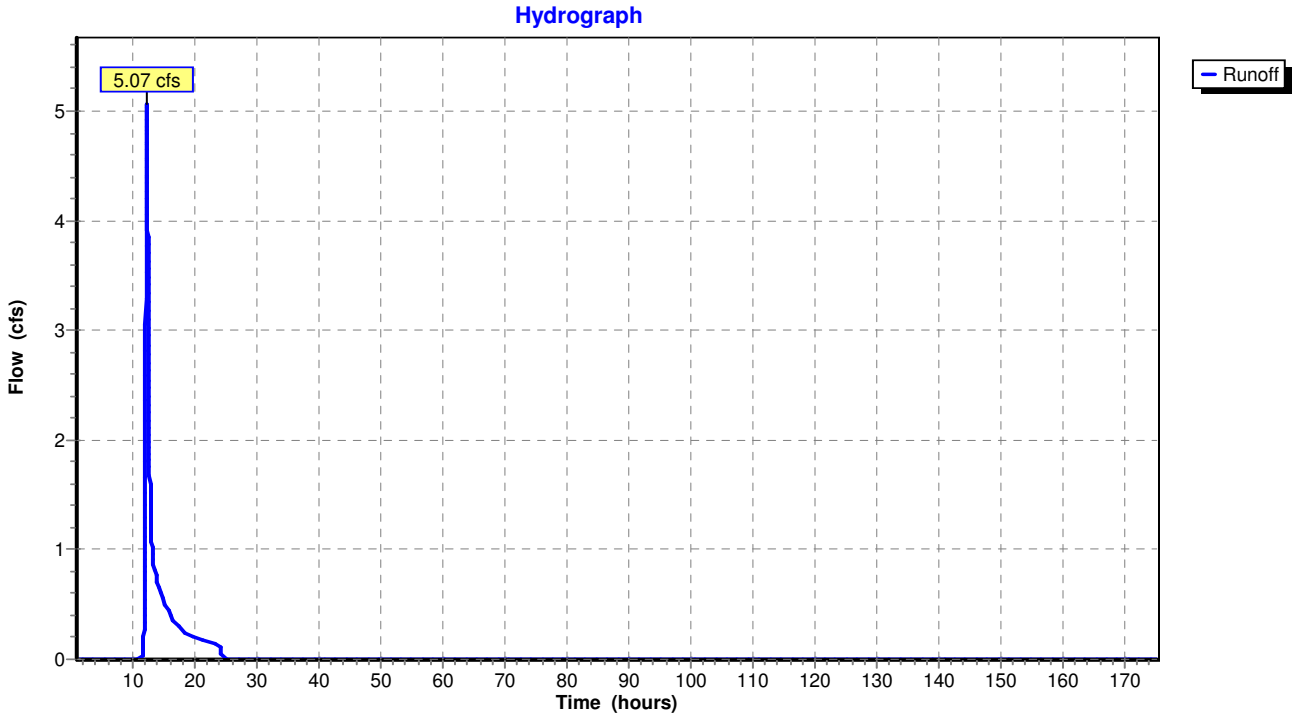
Runoff = 5.07 cfs @ 12.25 hrs, Volume= 0.559 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
0.700	98	Paved parking & roofs
9.000	70	Woods, Good, HSG C
9.700	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1400	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.5	780	0.1600	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.9	880	Total			

Subcatchment 3.3:



Subcatchment 3.4:

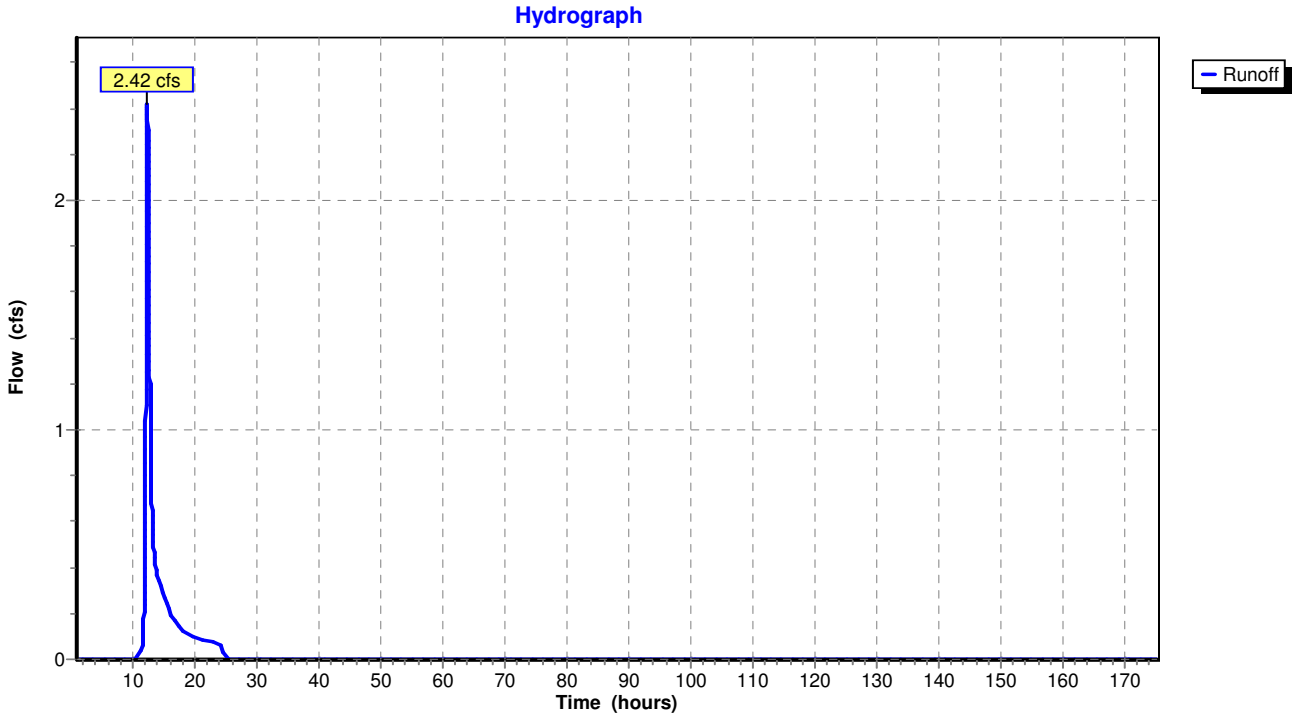
Runoff = 2.42 cfs @ 12.37 hrs, Volume= 0.294 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-year Rainfall=2.80"

Area (ac)	CN	Description
2.800	79	1 acre lots, 20% imp, HSG C
1.200	70	Woods, Good, HSG C
4.000	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.8	1,530	0.0700	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	1,630	Total			

Subcatchment 3.4:



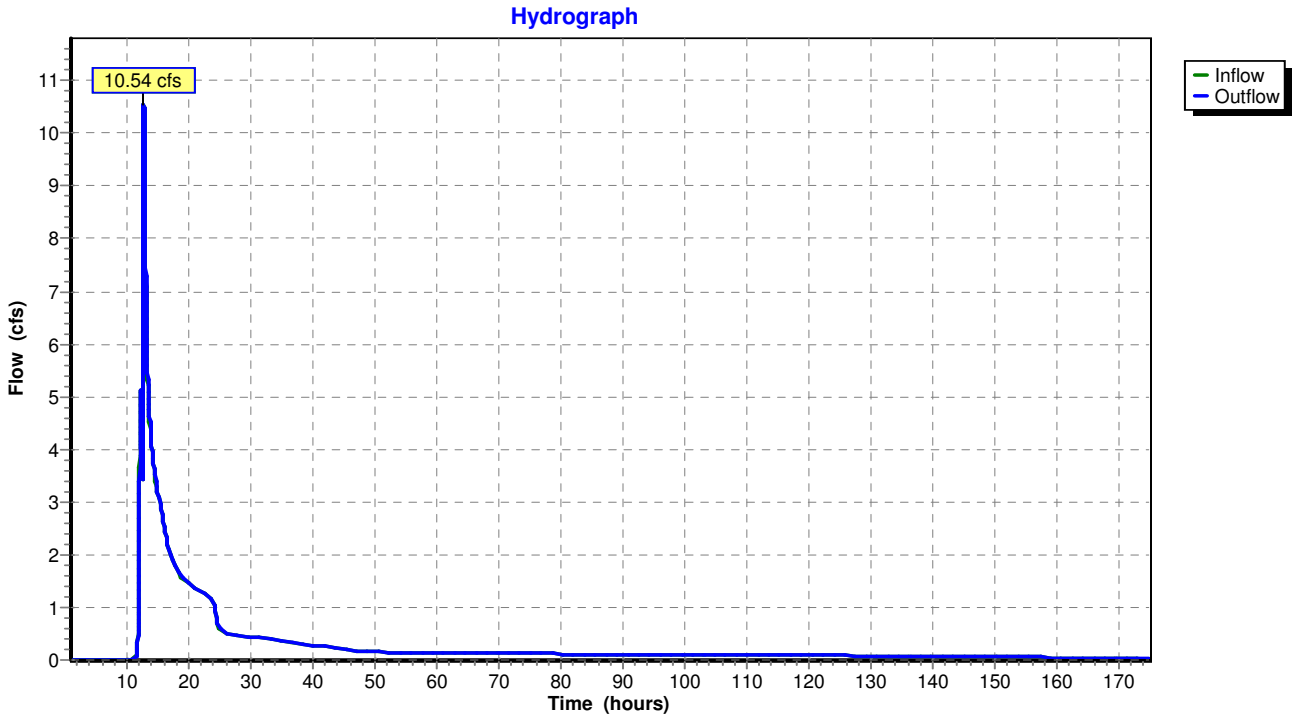
Reach Design Line 3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 49.100 ac, Inflow Depth > 1.03" for 1-year event
Inflow = 10.54 cfs @ 12.77 hrs, Volume= 4.224 af
Outflow = 10.54 cfs @ 12.78 hrs, Volume= 4.224 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Line 3:



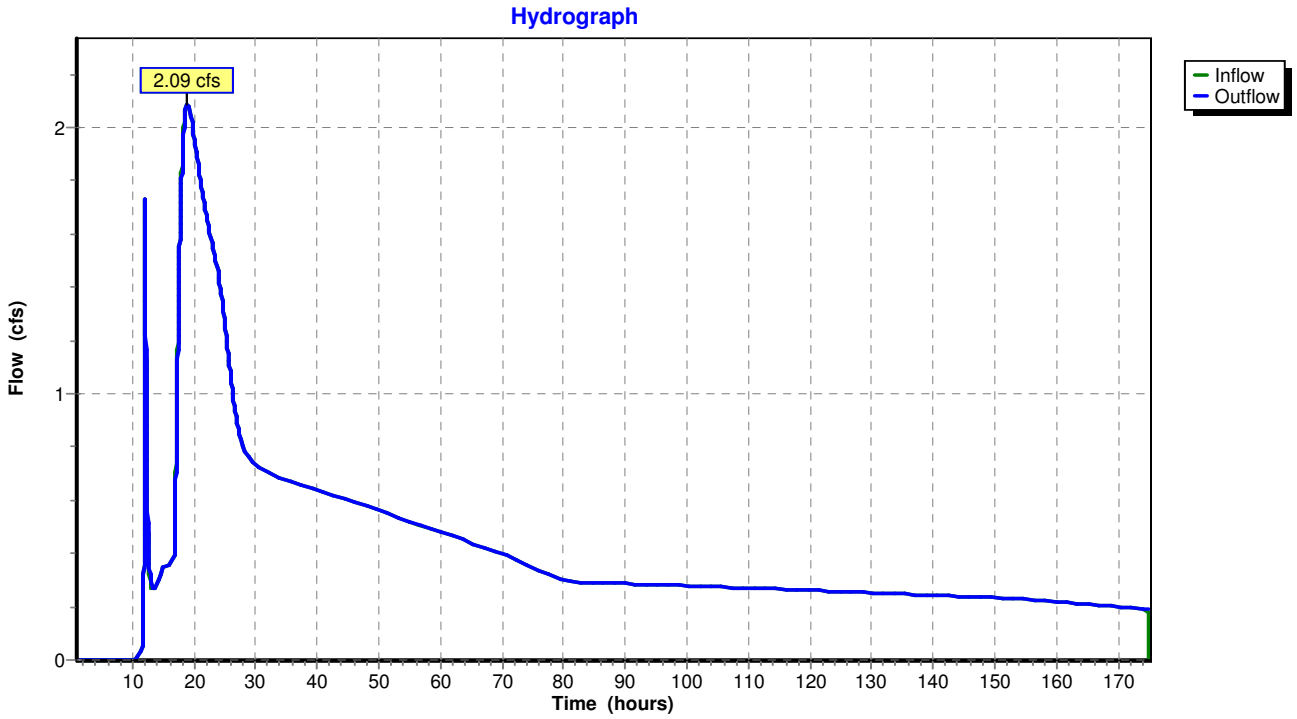
Reach Design Point 1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 50.900 ac, Inflow Depth > 1.36" for 1-year event
Inflow = 2.09 cfs @ 18.95 hrs, Volume= 5.776 af
Outflow = 2.09 cfs @ 18.96 hrs, Volume= 5.776 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 1:



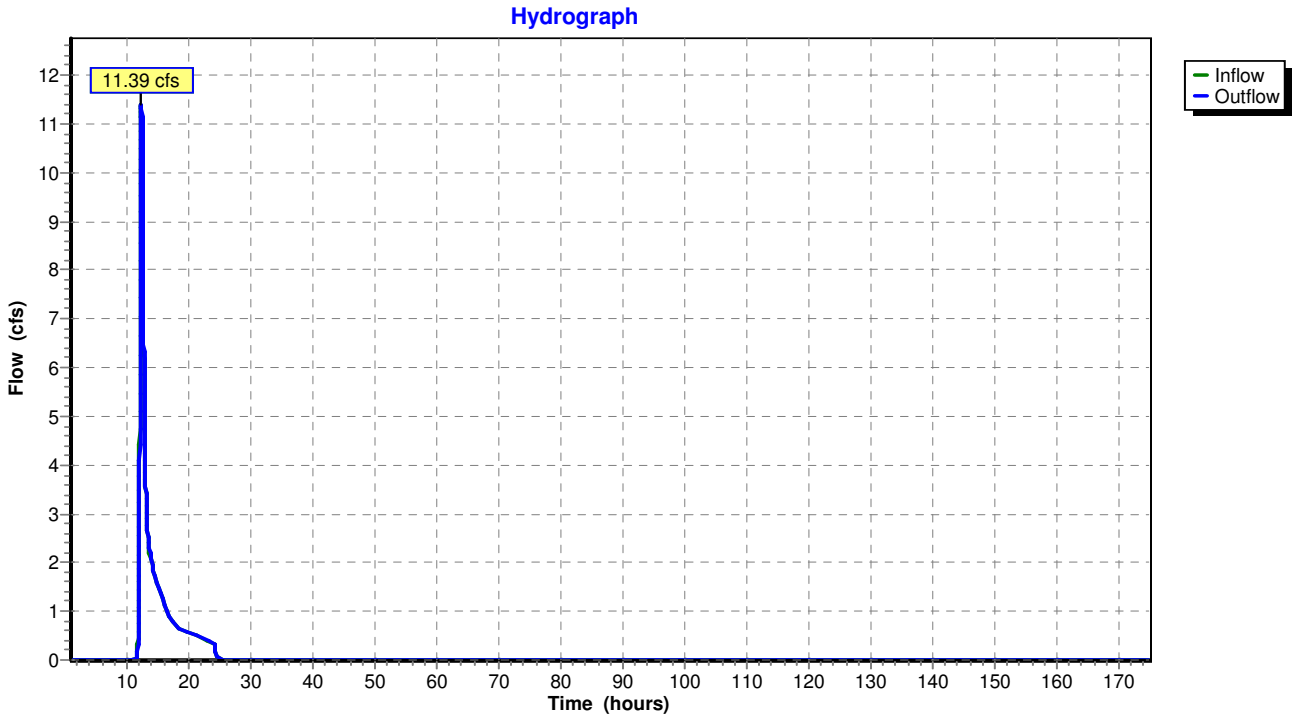
Reach Design Point 2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 26.100 ac, Inflow Depth = 0.69" for 1-year event
Inflow = 11.39 cfs @ 12.40 hrs, Volume= 1.505 af
Outflow = 11.39 cfs @ 12.41 hrs, Volume= 1.505 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 2:



Pond 1.1P:

Inflow Area = 35.500 ac, Inflow Depth = 1.57" for 1-year event
Inflow = 45.84 cfs @ 12.25 hrs, Volume= 4.632 af
Outflow = 7.12 cfs @ 13.12 hrs, Volume= 4.553 af, Atten= 84%, Lag= 52.4 min
Primary = 7.12 cfs @ 13.12 hrs, Volume= 4.553 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 780.20' Surf.Area= 33,940 sf Storage= 102,450 cf
Peak Elev= 782.84' @ 13.12 hrs Surf.Area= 49,344 sf Storage= 213,862 cf (111,412 cf above start)
Plug-Flow detention time= 3,553.9 min calculated for 2.201 af (48% of inflow)
Center-of-Mass det. time= 1,728.1 min (2,564.0 - 835.9)

Volume	Invert	Avail.Storage	Storage Description
#1	773.00'	348,200 cf	**Custom Stage Data (Prismatic)** Listed below

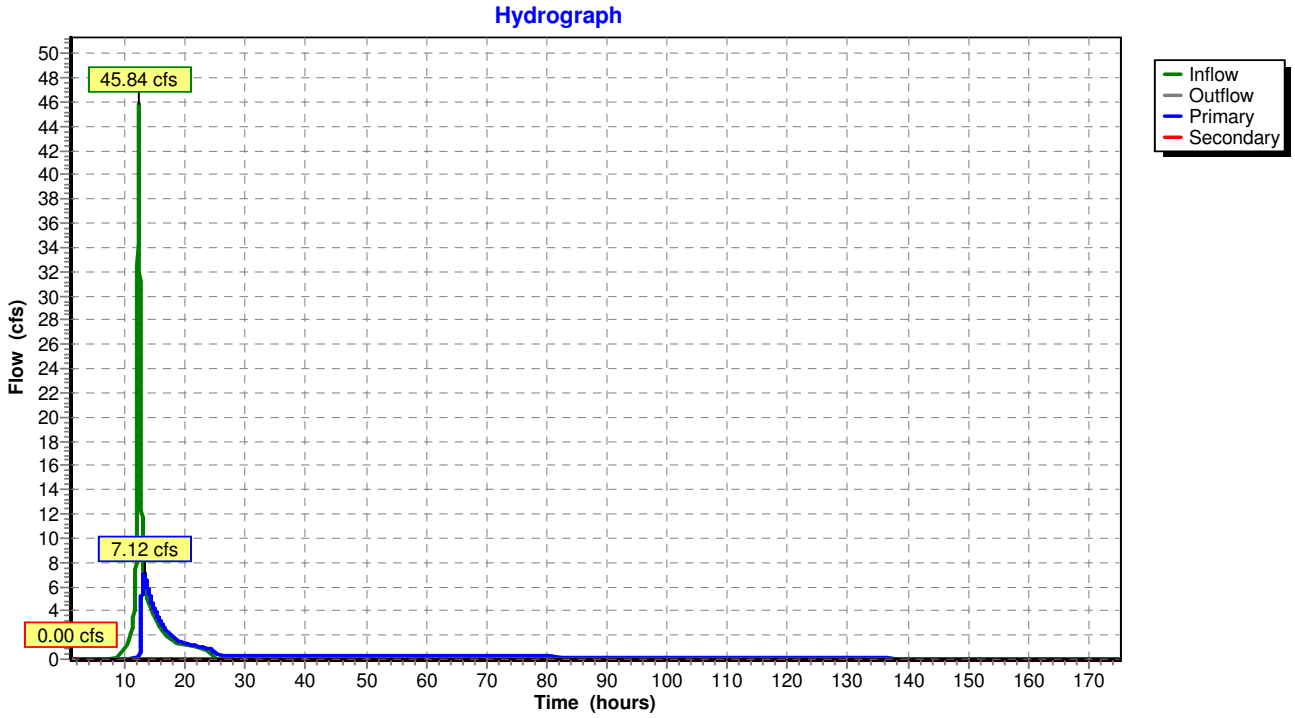
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
773.00	700	0	0
774.00	3,200	1,950	1,950
776.00	10,300	13,500	15,450
778.00	18,100	28,400	43,850
780.00	32,800	50,900	94,750
782.00	44,200	77,000	171,750
784.00	56,500	100,700	272,450
785.00	63,000	59,750	332,200
785.25	65,000	16,000	348,200

Device	Routing	Invert	Outlet Devices
#1	Primary	780.20'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	783.00'	**25.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	782.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=7.12 cfs @ 13.12 hrs HW=782.84' TW=770.84' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.6 fps)
└—**3=Broad-Crested Rectangular Weir** (Weir Controls 6.75 cfs @ 1.7 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=780.20' TW=770.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.1P:


Hydrograph
45.84 cfs
7.12 cfs
0.00 cfs
Flow (cfs)
Time (hours)
Inflow
Outflow
Primary
Secondary

Pond 1.2P:

Inflow Area = 36.600 ac, Inflow Depth > 1.52" for 1-year event
Inflow = 7.23 cfs @ 13.12 hrs, Volume= 4.625 af
Outflow = 5.04 cfs @ 14.27 hrs, Volume= 4.496 af, Atten= 30%, Lag= 69.0 min
Primary = 0.20 cfs @ 14.27 hrs, Volume= 2.190 af
Secondary = 4.84 cfs @ 14.27 hrs, Volume= 2.306 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 770.00' Surf.Area= 12,900 sf Storage= 33,300 cf
Peak Elev= 771.90' @ 14.27 hrs Surf.Area= 17,560 sf Storage= 62,496 cf (29,196 cf above start)
Plug-Flow detention time= 2,190.1 min calculated for 3.732 af (81% of inflow)
Center-of-Mass det. time= 766.1 min (3,303.7 - 2,537.6)

Volume	Invert	Avail.Storage	Storage Description
#1	766.00'	156,300 cf	**Custom Stage Data (Prismatic)** Listed below

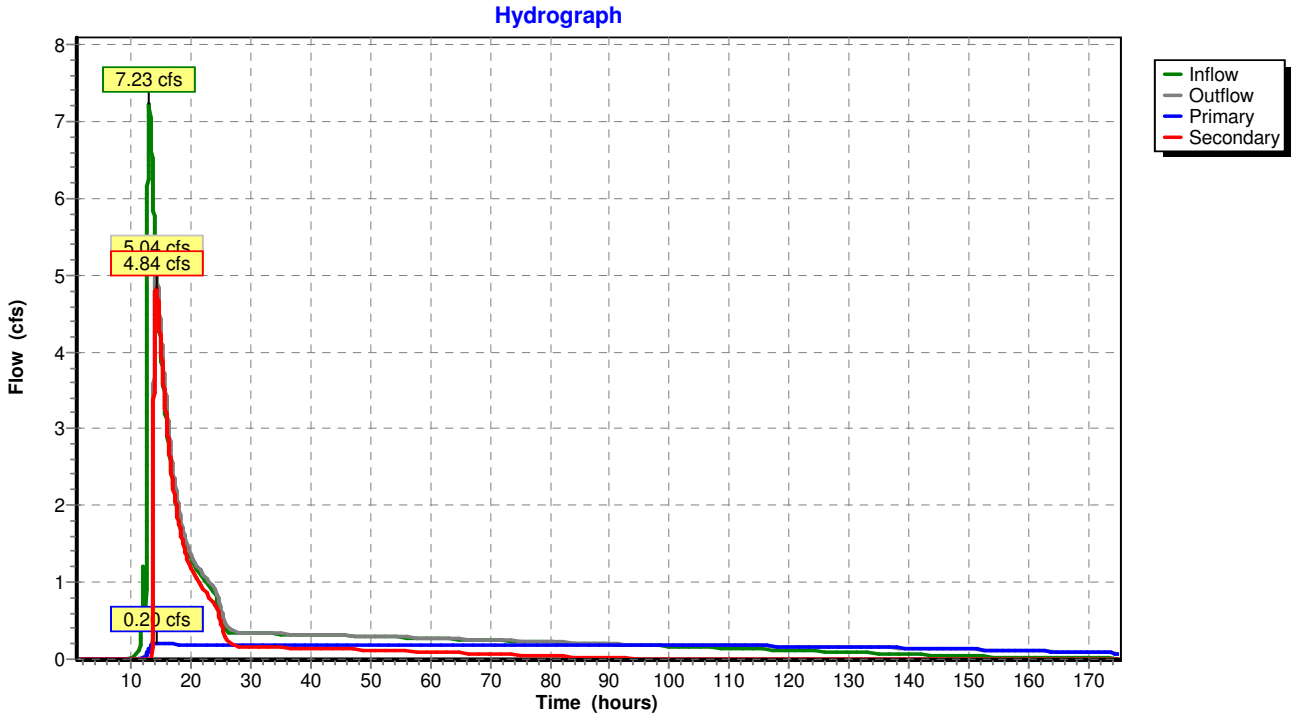
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
766.00	4,000	0	0
768.00	8,200	12,200	12,200
770.00	12,900	21,100	33,300
772.00	17,800	30,700	64,000
774.00	23,000	40,800	104,800
776.00	28,500	51,500	156,300

Device	Routing	Invert	Outlet Devices
#1	Primary	770.00'	**2.4" Vert. Orifice/Grate** C= 0.600
#2	Secondary	771.50'	**6.5' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.20 cfs @ 14.27 hrs HW=771.90' TW=757.12' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.20 cfs @ 6.5 fps)

Secondary OutFlow Max=4.84 cfs @ 14.27 hrs HW=771.90' TW=757.12' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 4.84 cfs @ 1.9 fps)

Pond 1.2P:


Hydrograph
7.23 cfs
5.04 cfs
4.84 cfs
0.20 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.3P:

Inflow Area = 10.900 ac, Inflow Depth = 1.64" for 1-year event
Inflow = 15.06 cfs @ 12.23 hrs, Volume= 1.491 af
Outflow = 0.39 cfs @ 19.23 hrs, Volume= 1.488 af, Atten= 97%, Lag= 419.7 min
Primary = 0.39 cfs @ 19.23 hrs, Volume= 1.488 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 763.50' Surf.Area= 12,775 sf Storage= 36,875 cf
Peak Elev= 766.32' @ 19.23 hrs Surf.Area= 22,340 sf Storage= 86,038 cf (49,163 cf above start)
Plug-Flow detention time= 2,741.0 min calculated for 0.641 af (43% of inflow)
Center-of-Mass det. time= 1,522.2 min (2,353.2 - 830.9)

Volume	Invert	Avail.Storage	Storage Description
#1	758.00'	194,200 cf	**Custom Stage Data (Prismatic)** Listed below

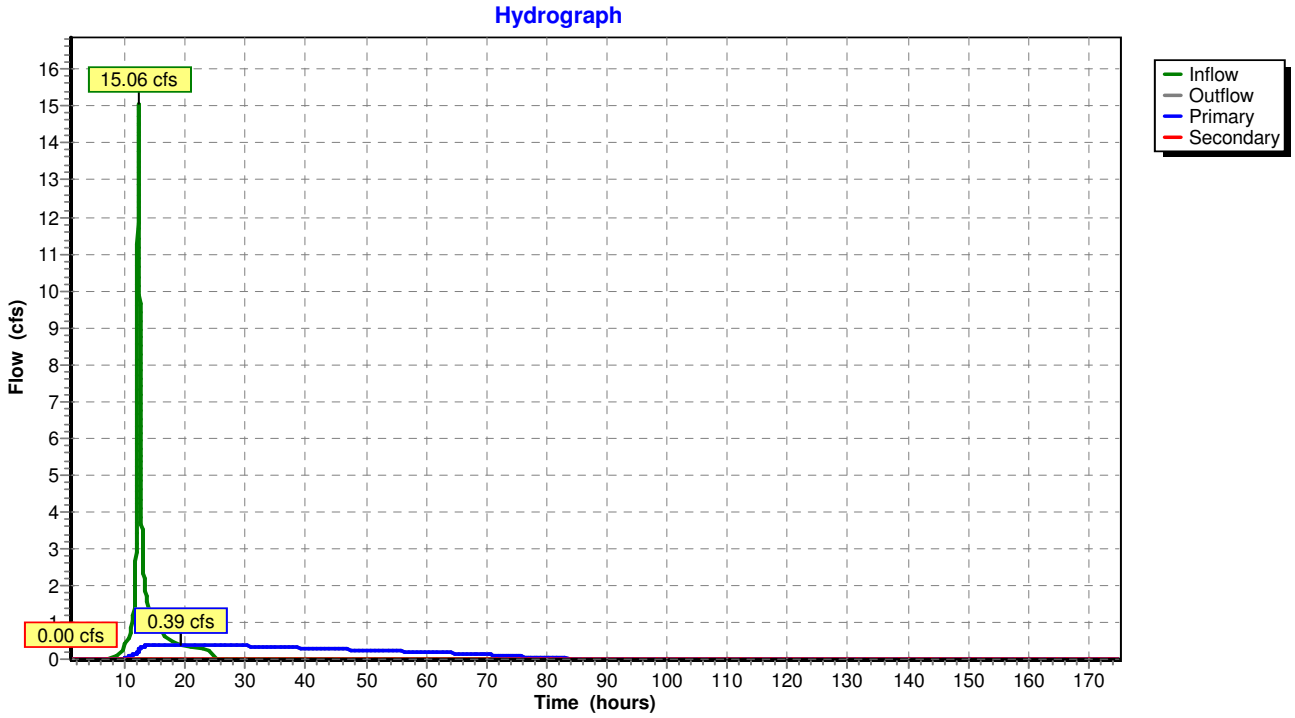
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
758.00	2,900	0	0
760.00	4,900	7,800	7,800
762.00	7,600	12,500	20,300
764.00	14,500	22,100	42,400
766.00	21,100	35,600	78,000
768.00	28,800	49,900	127,900
770.00	37,500	66,300	194,200

Device	Routing	Invert	Outlet Devices
#1	Primary	763.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	767.50'	**2.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.39 cfs @ 19.23 hrs HW=766.32' TW=759.69' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.39 cfs @ 7.9 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=763.50' TW=756.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.3P:


Hydrograph
15.06 cfs
0.39 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.4P:

Inflow Area = 48.900 ac, Inflow Depth > 1.49" for 1-year event
Inflow = 5.51 cfs @ 14.27 hrs, Volume= 6.075 af
Outflow = 2.04 cfs @ 18.96 hrs, Volume= 5.646 af, Atten= 63%, Lag= 281.3 min
Primary = 0.31 cfs @ 18.96 hrs, Volume= 3.600 af
Secondary = 1.73 cfs @ 18.96 hrs, Volume= 2.046 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 756.00' Surf.Area= 9,900 sf Storage= 20,400 cf
Peak Elev= 759.69' @ 18.96 hrs Surf.Area= 21,625 sf Storage= 79,481 cf (59,081 cf above start)
Plug-Flow detention time= 2,244.3 min calculated for 5.177 af (85% of inflow)
Center-of-Mass det. time= 1,115.6 min (4,149.8 - 3,034.2)

Volume	Invert	Avail.Storage	Storage Description
#1	752.00'	276,000 cf	**Custom Stage Data (Prismatic)** Listed below

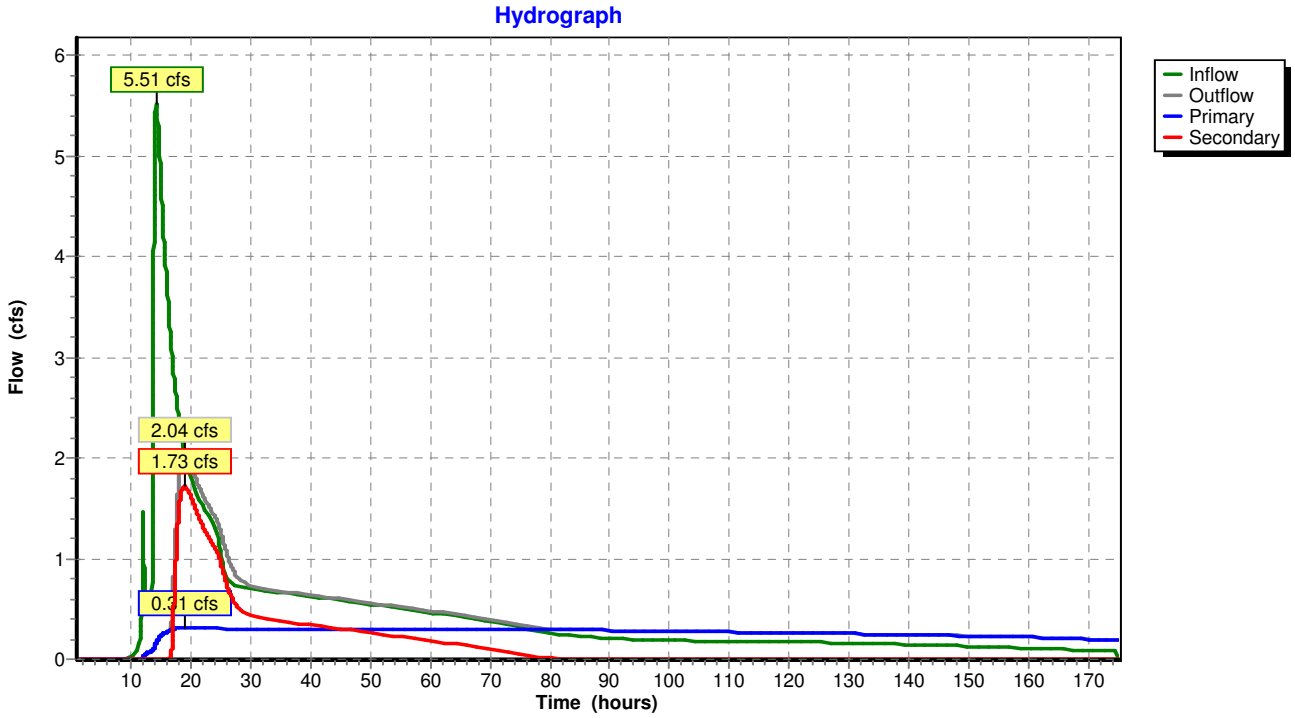
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
752.00	900	0	0
754.00	4,800	5,700	5,700
756.00	9,900	14,700	20,400
758.00	16,300	26,200	46,600
760.00	22,600	38,900	85,500
762.00	29,200	51,800	137,300
764.00	34,700	63,900	201,200
766.00	40,100	74,800	276,000

Device	Routing	Invert	Outlet Devices
#1	Secondary	759.25'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	756.00'	**2.5" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.31 cfs @ 18.96 hrs HW=759.69' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 9.1 fps)

Secondary OutFlow Max=1.73 cfs @ 18.96 hrs HW=759.69' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.73 cfs @ 2.0 fps)

Pond 1.4P:


Hydrograph
5.51 cfs
2.04 cfs
1.73 cfs
0.31 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.1P:

Inflow Area = 10.400 ac, Inflow Depth = 1.16" for 1-year event
Inflow = 9.99 cfs @ 12.24 hrs, Volume= 1.007 af
Outflow = 0.41 cfs @ 17.60 hrs, Volume= 1.003 af, Atten= 96%, Lag= 321.6 min
Primary = 0.41 cfs @ 17.60 hrs, Volume= 1.003 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 718.00' Surf.Area= 9,500 sf Storage= 21,600 cf
Peak Elev= 720.18' @ 17.60 hrs Surf.Area= 17,188 sf Storage= 51,213 cf (29,613 cf above start)
Plug-Flow detention time= 1,701.2 min calculated for 0.507 af (50% of inflow)
Center-of-Mass det. time= 959.2 min (1,815.9 - 856.6)

Volume	Invert	Avail.Storage	Storage Description
#1	714.00'	157,600 cf	**Custom Stage Data (Prismatic)** Listed below

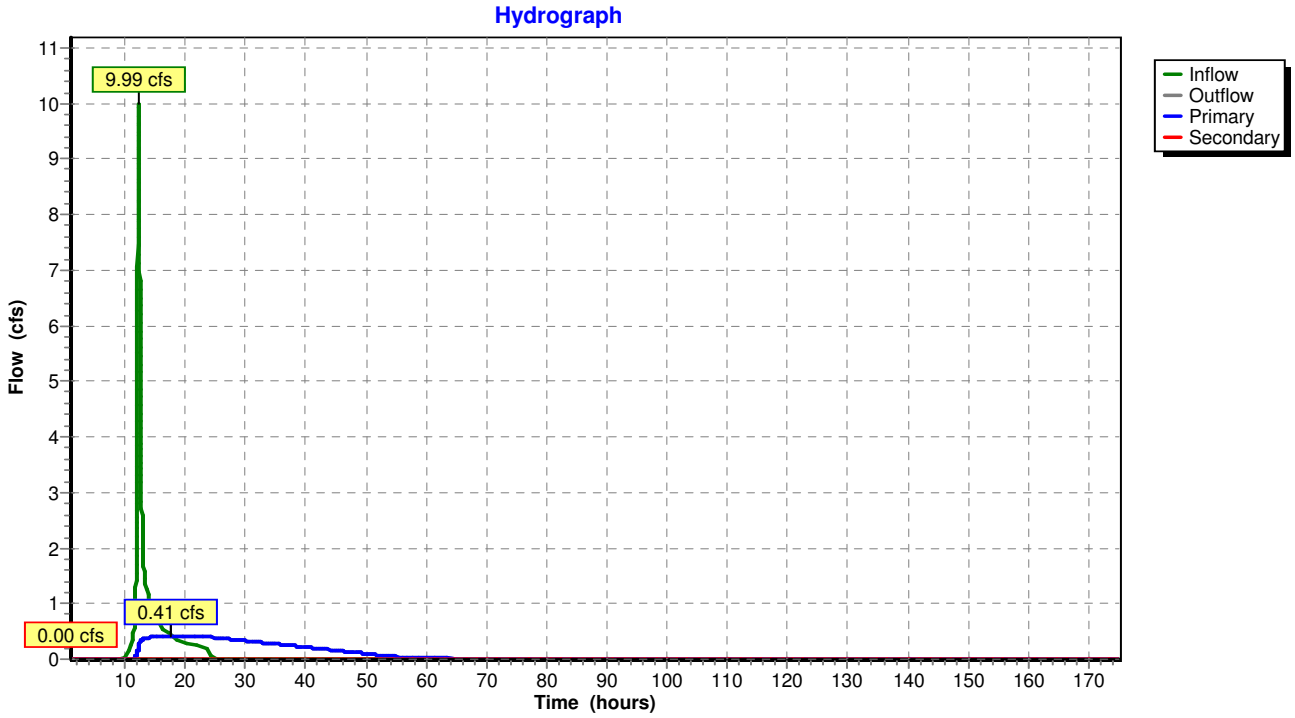
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.00	2,500	0	0
716.00	4,800	7,300	7,300
718.00	9,500	14,300	21,600
720.00	16,000	25,500	47,100
722.00	29,000	45,000	92,100
724.00	36,500	65,500	157,600

Device	Routing	Invert	Outlet Devices
#1	Primary	718.00'	**3.3" Vert. Orifice/Grate** C= 0.600
#2	Secondary	722.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.41 cfs @ 17.60 hrs HW=720.18' TW=673.60' (Dynamic Tailwater)
1=Orifice/Grate (Orifice Controls 0.41 cfs @ 6.9 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=718.00' TW=671.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3.1P:


Hydrograph
9.99 cfs
0.41 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.2P:

Inflow Area = 35.400 ac, Inflow Depth = 1.16" for 1-year event
Inflow = 21.86 cfs @ 12.32 hrs, Volume= 3.424 af
Outflow = 8.84 cfs @ 12.78 hrs, Volume= 3.372 af, Atten= 60%, Lag= 28.0 min
Primary = 0.14 cfs @ 12.78 hrs, Volume= 1.344 af
Secondary = 8.70 cfs @ 12.78 hrs, Volume= 2.027 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 671.00' Surf.Area= 11,400 sf Storage= 24,850 cf
Peak Elev= 673.83' @ 12.78 hrs Surf.Area= 21,511 sf Storage= 70,367 cf (45,517 cf above start)
Plug-Flow detention time= 2,015.2 min calculated for 2.801 af (82% of inflow)
Center-of-Mass det. time= 1,406.2 min (2,547.2 - 1,141.0)

Volume	Invert	Avail.Storage	Storage Description
#1	666.00'	124,850 cf	**Custom Stage Data (Prismatic)** Listed below

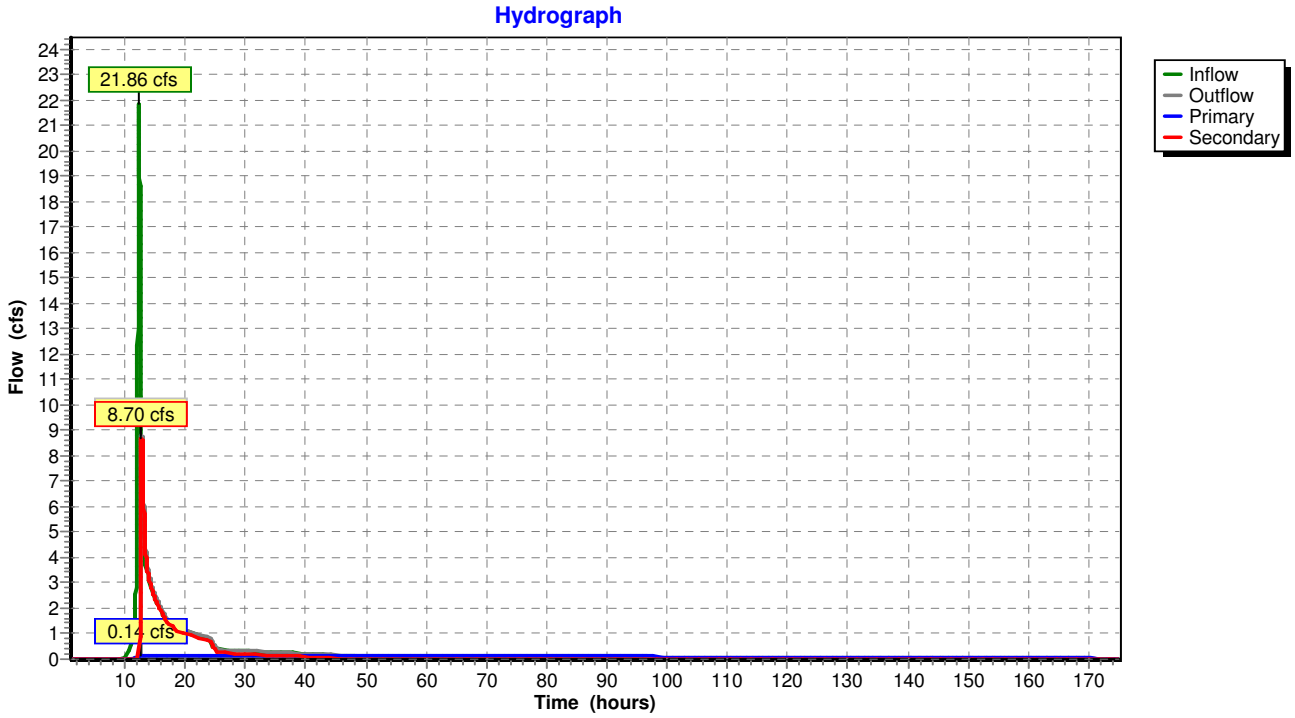
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
666.00	450	0	0
668.00	2,700	3,150	3,150
670.00	7,600	10,300	13,450
672.00	15,200	22,800	36,250
674.00	22,100	37,300	73,550
676.00	29,200	51,300	124,850

Device	Routing	Invert	Outlet Devices
#1	Primary	671.00'	**1.8" Vert. Orifice/Grate** C= 0.600
#2	Secondary	673.50'	**16.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.14 cfs @ 12.78 hrs HW=673.83' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.14 cfs @ 8.0 fps)

Secondary OutFlow Max=8.70 cfs @ 12.78 hrs HW=673.83' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 8.70 cfs @ 1.7 fps)

Pond 3.2P:


Hydrograph
21.86 cfs
8.70 cfs
0.14 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.4P:

Inflow Area = 4.000 ac, Inflow Depth = 0.88" for 1-year event
Inflow = 2.42 cfs @ 12.37 hrs, Volume= 0.294 af
Outflow = 0.13 cfs @ 17.76 hrs, Volume= 0.293 af, Atten= 95%, Lag= 323.8 min
Primary = 0.13 cfs @ 17.76 hrs, Volume= 0.293 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 754.00' Surf.Area= 4,300 sf Storage= 8,000 cf
Peak Elev= 755.40' @ 17.76 hrs Surf.Area= 6,540 sf Storage= 16,259 cf (8,259 cf above start)
Plug-Flow detention time= 1,776.2 min calculated for 0.110 af (37% of inflow)
Center-of-Mass det. time= 856.9 min (1,737.5 - 880.6)

Volume	Invert	Avail.Storage	Storage Description
#1	750.00'	37,800 cf	**Custom Stage Data (Prismatic)** Listed below

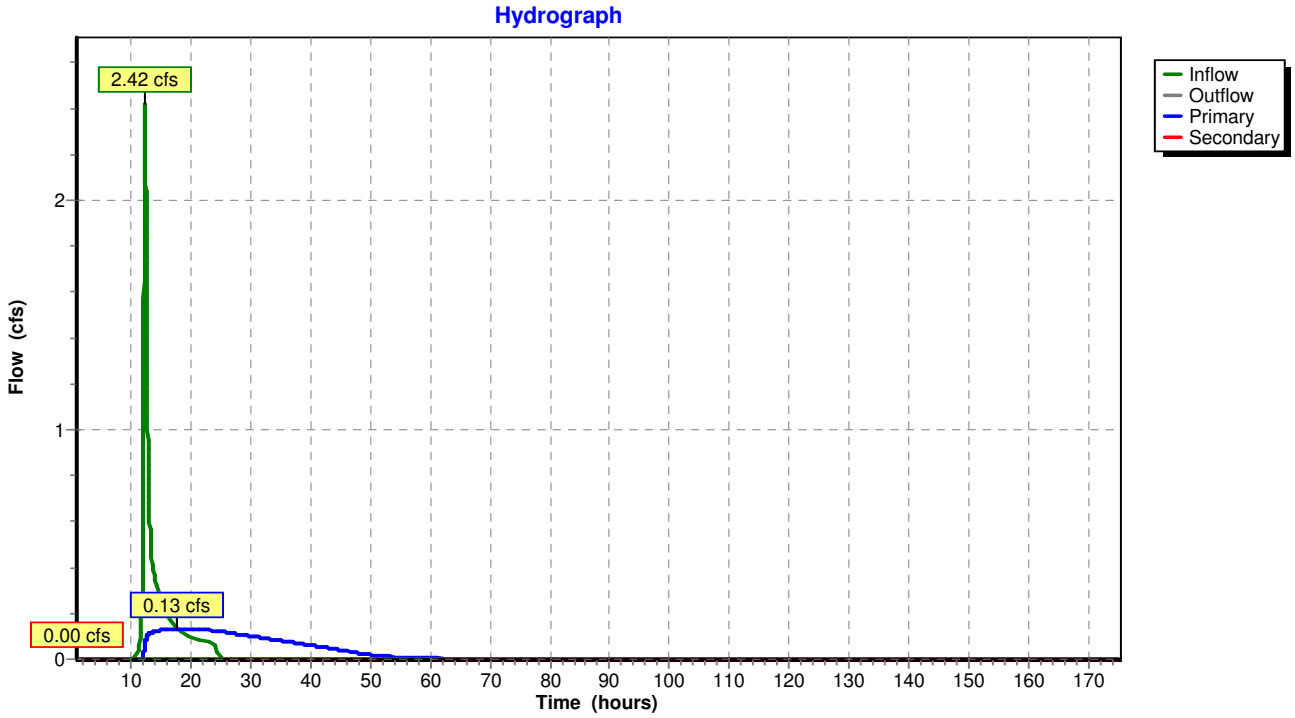
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
750.00	500	0	0
752.00	1,600	2,100	2,100
754.00	4,300	5,900	8,000
756.00	7,500	11,800	19,800
758.00	10,500	18,000	37,800

Device	Routing	Invert	Outlet Devices
#1	Primary	754.00'	**2.1" Vert. Orifice/Grate** C= 0.600
#2	Secondary	756.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.13 cfs @ 17.76 hrs HW=755.40' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 0.13 cfs @ 5.5 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=754.00' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3.4P:


Hydrograph
2.42 cfs
0.13 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Subcatchment 1.1:

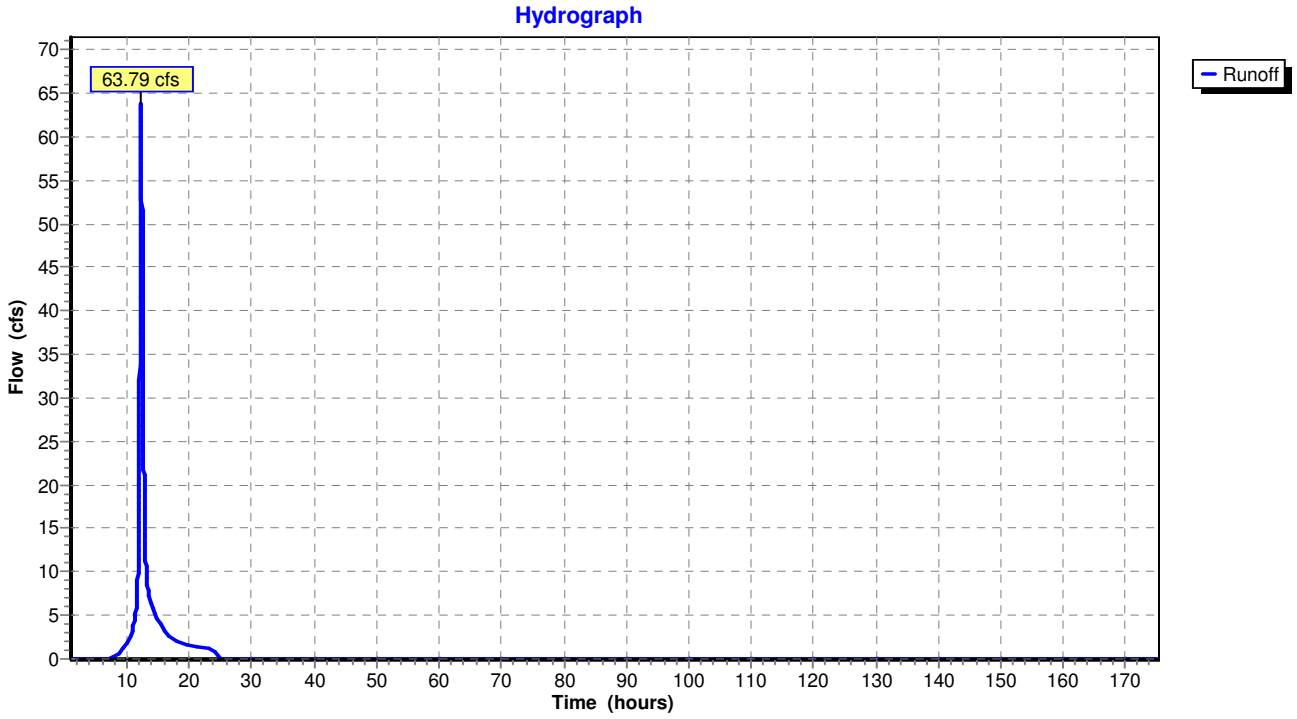
Runoff = 63.79 cfs @ 12.25 hrs, Volume= 6.456 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
23.000	94	Suburban Shopping Center
1.300	70	Woods, Good, HSG C
1.500	79	1 acre lots, 20% imp, HSG C
9.700	74	>75% Grass cover, Good, HSG C
35.500	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.6	610	0.1000	2.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	100	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	1,200	0.0330	13.1	41.10	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
18.1	2,010	Total			

Subcatchment 1.1:



Subcatchment 1.2:

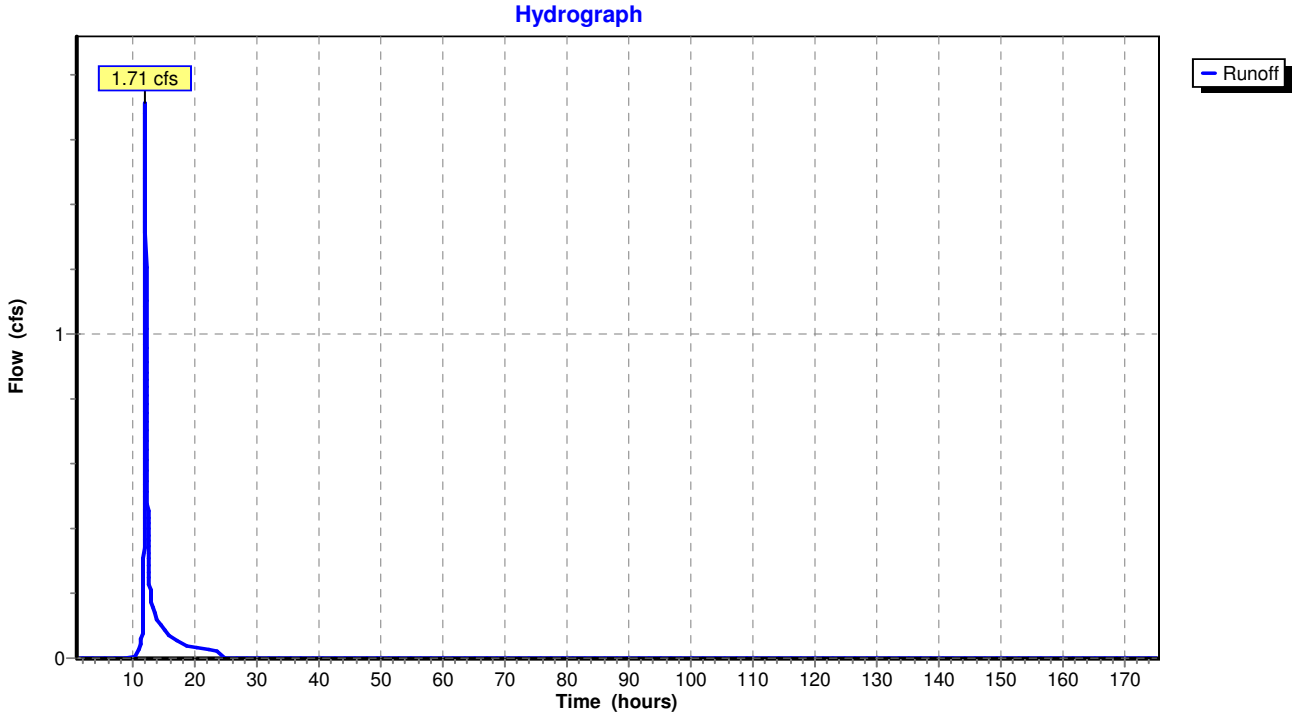
Runoff = 1.71 cfs @ 12.05 hrs, Volume= 0.114 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
1.100	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	60	0.3000	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.2:



Subcatchment 1.3:

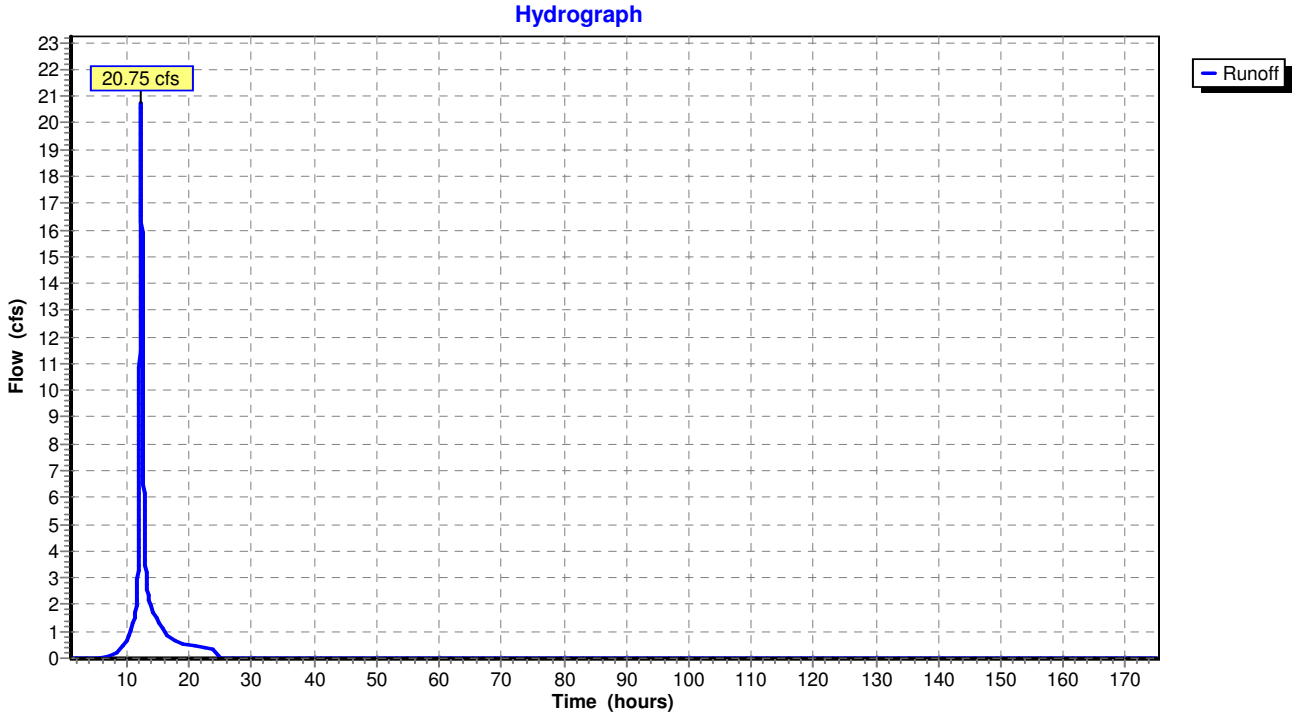
Runoff = 20.75 cfs @ 12.23 hrs, Volume= 2.061 af, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
7.400	94	Suburban Shopping Center
1.700	79	1 acre lots, 20% imp, HSG C
1.800	74	>75% Grass cover, Good, HSG C
10.900	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
7.6	875	0.0750	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	800	0.0250	11.4	35.77	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
17.1	1,775	Total			

Subcatchment 1.3:



Subcatchment 1.4:

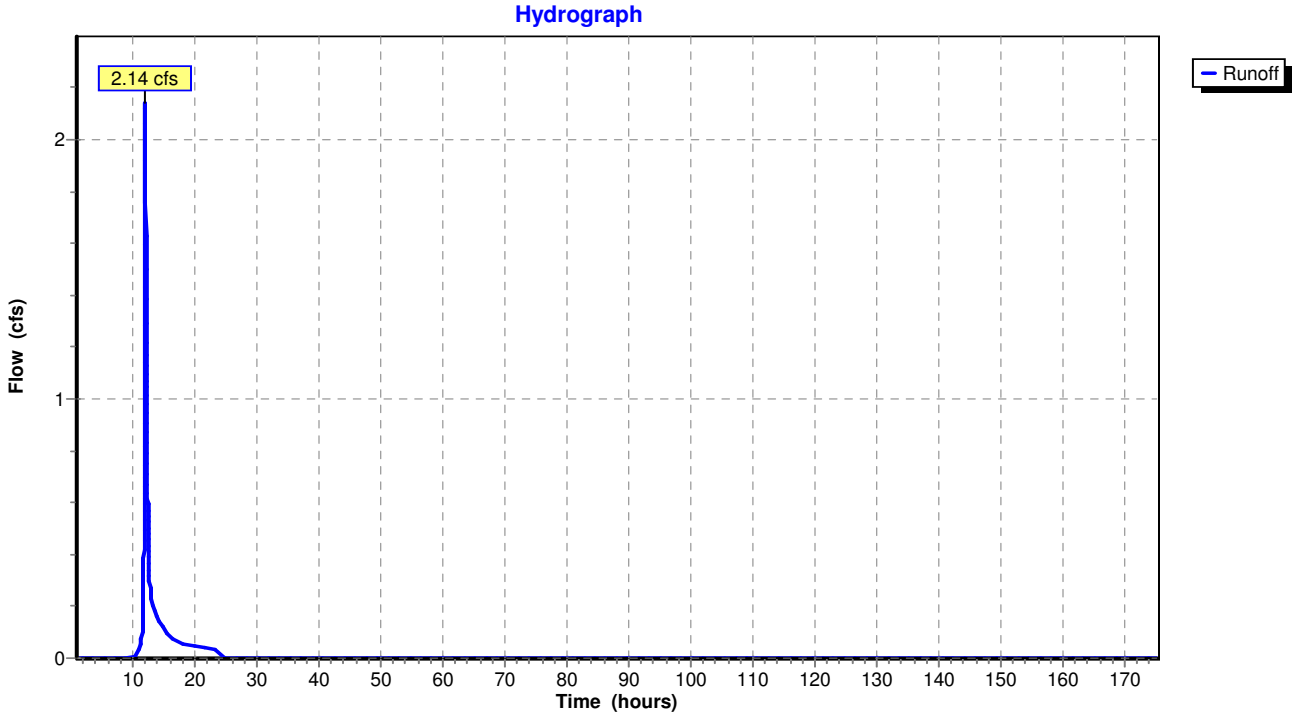
Runoff = 2.14 cfs @ 12.06 hrs, Volume= 0.145 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
1.400	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	70	0.2800	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.4:



Subcatchment 1.5:

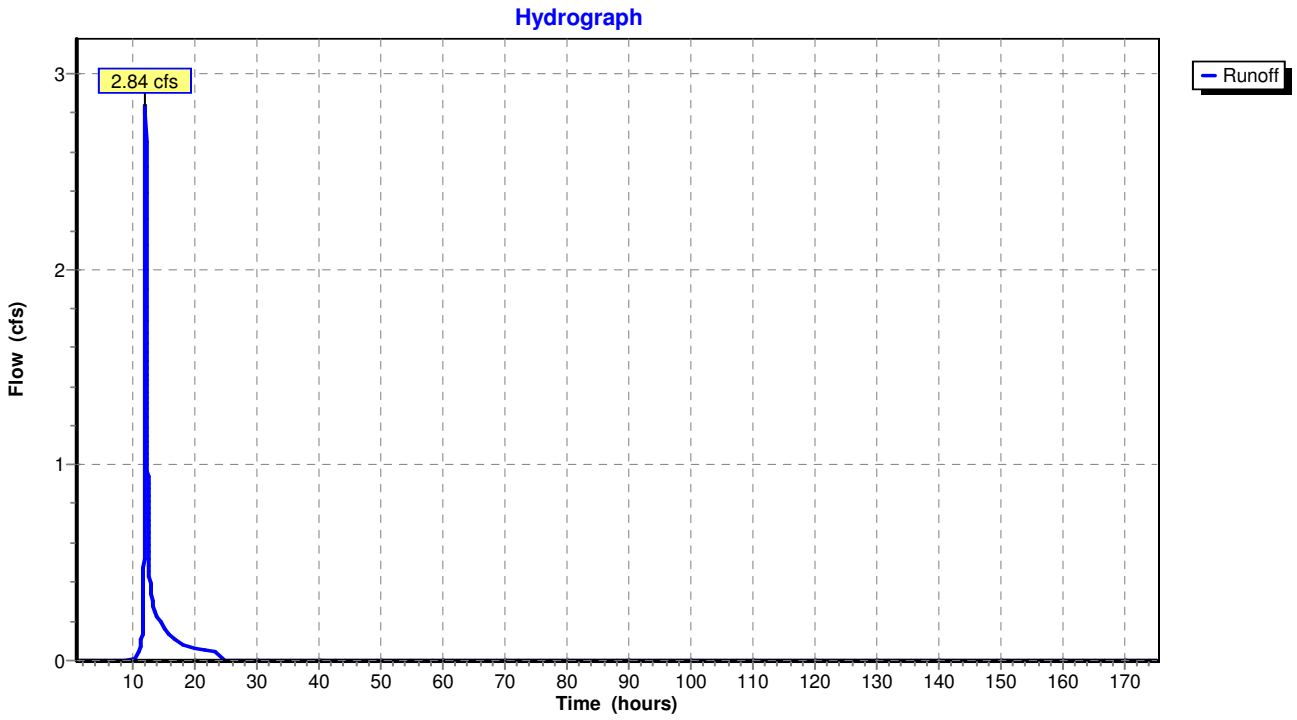
Runoff = 2.84 cfs @ 12.09 hrs, Volume= 0.207 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
2.000	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	53	0.0400	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	850	0.0200	11.0	176.03	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.0 '/' Top.W=12.00' n= 0.022 Earth, clean & straight
5.6	903	Total			

Subcatchment 1.5:



Subcatchment 2.0:

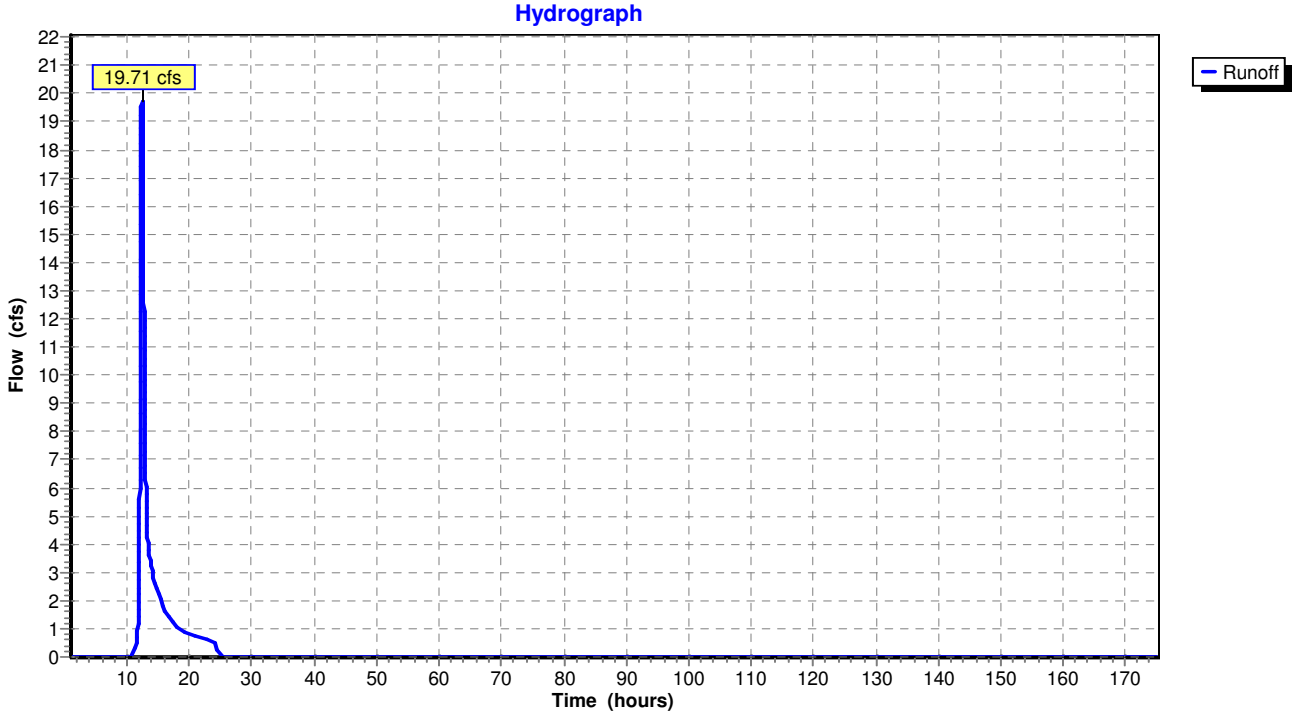
Runoff = 19.71 cfs @ 12.38 hrs, Volume= 2.438 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
16.000	70	Woods, Good, HSG C
10.100	74	>75% Grass cover, Good, HSG C
26.100	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.4	1,500	0.1400	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	170	0.0600	17.6	55.41	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
25.2	1,770	Total			

Subcatchment 2.0:



Subcatchment 3.1:

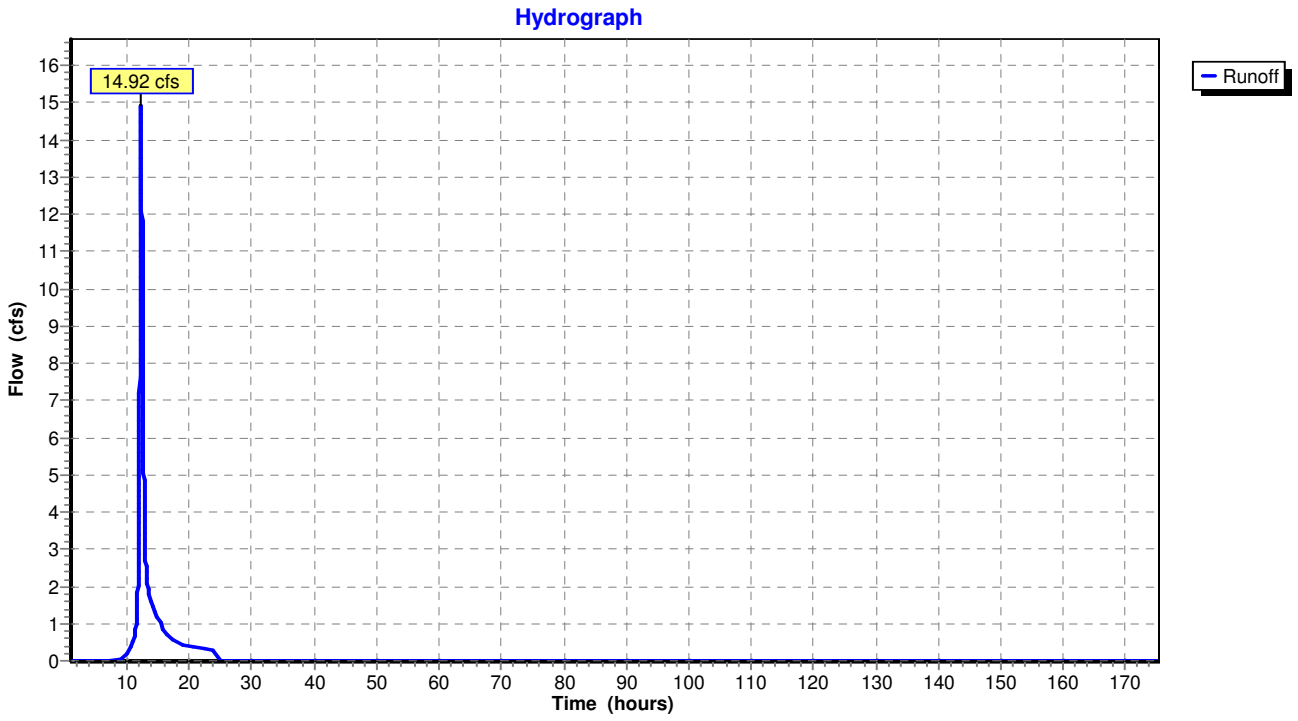
Runoff = 14.92 cfs @ 12.24 hrs, Volume= 1.481 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
3.800	94	Suburban Shopping Center
3.500	70	Woods, Good, HSG C
1.800	74	>75% Grass cover, Good, HSG C
1.300	79	1 acre lots, 20% imp, HSG C
10.400	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
8.7	1,100	0.0900	2.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	1,200	Total			

Subcatchment 3.1:



Subcatchment 3.2:

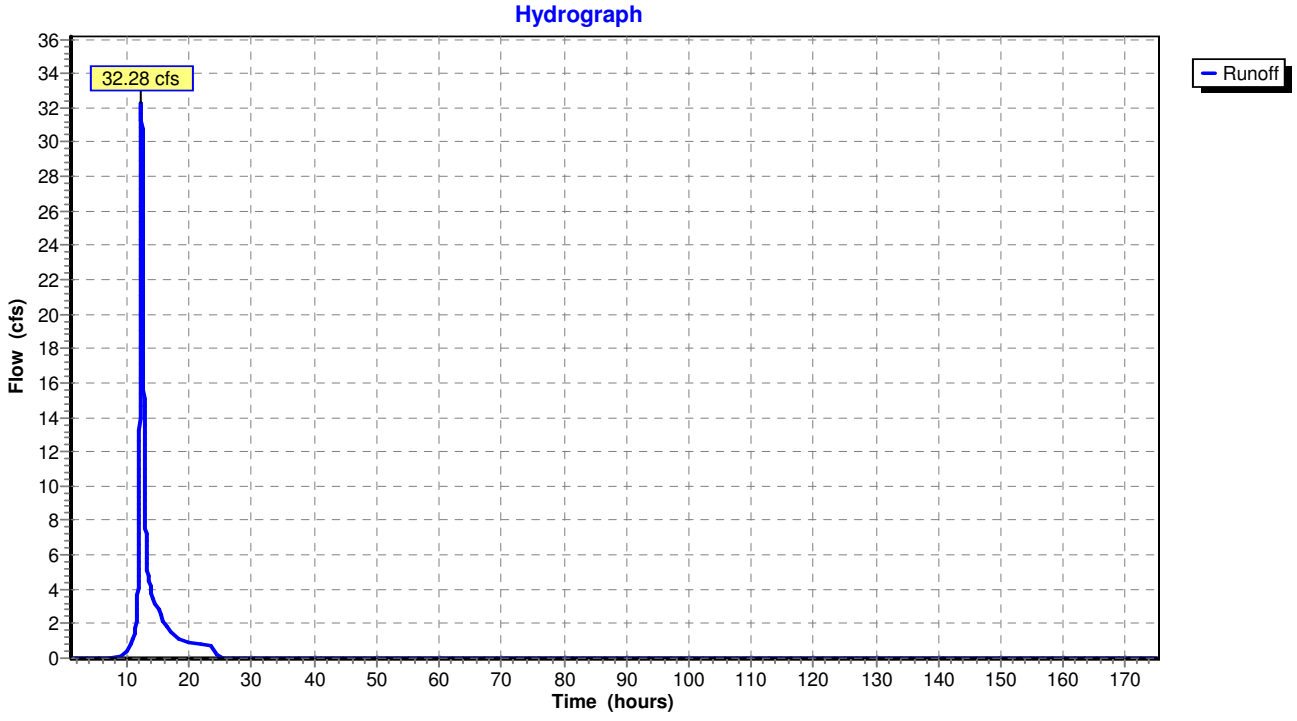
Runoff = 32.28 cfs @ 12.30 hrs, Volume= 3.559 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
1.000	70	Woods, Good, HSG C
7.500	98	Paved parking & roofs
16.500	74	>75% Grass cover, Good, HSG C
25.000	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
9.6	700	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	800	0.0500	16.1	50.59	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
22.0	1,600	Total			

Subcatchment 3.2:



Subcatchment 3.3:

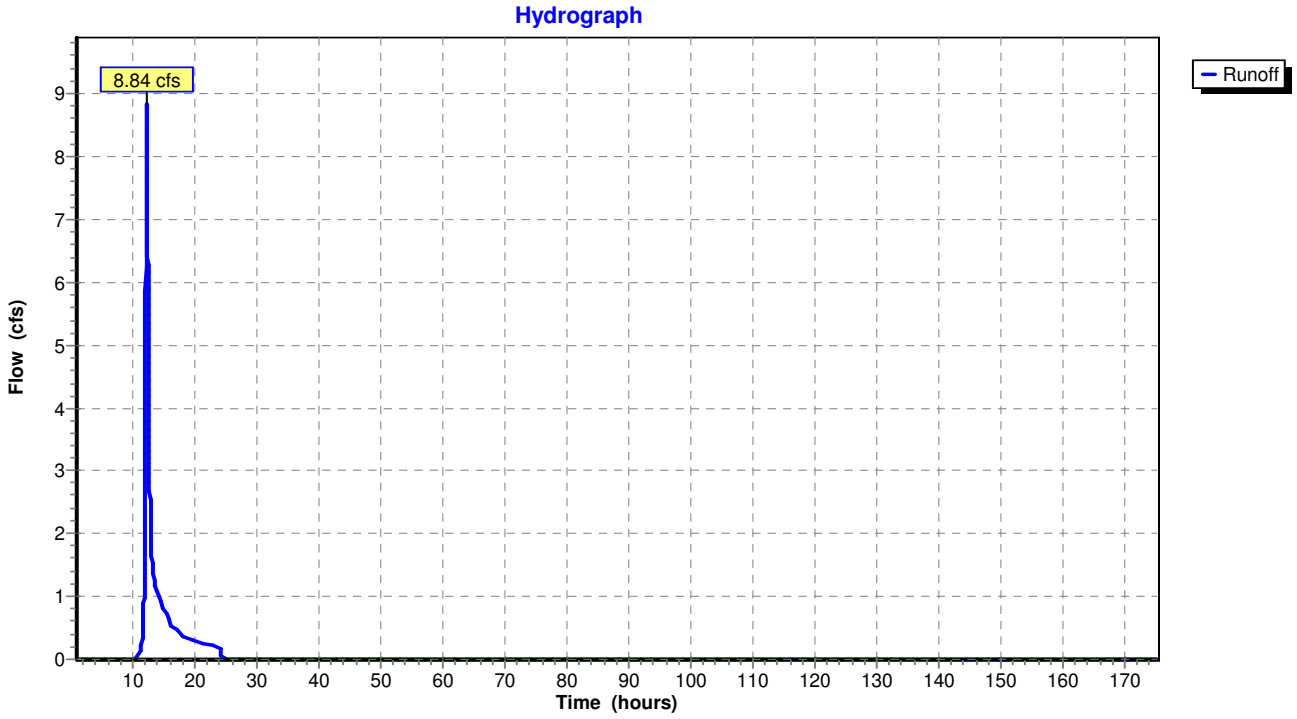
Runoff = 8.84 cfs @ 12.24 hrs, Volume= 0.906 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
0.700	98	Paved parking & roofs
9.000	70	Woods, Good, HSG C
9.700	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1400	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.5	780	0.1600	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.9	880	Total			

Subcatchment 3.3:



Subcatchment 3.4:

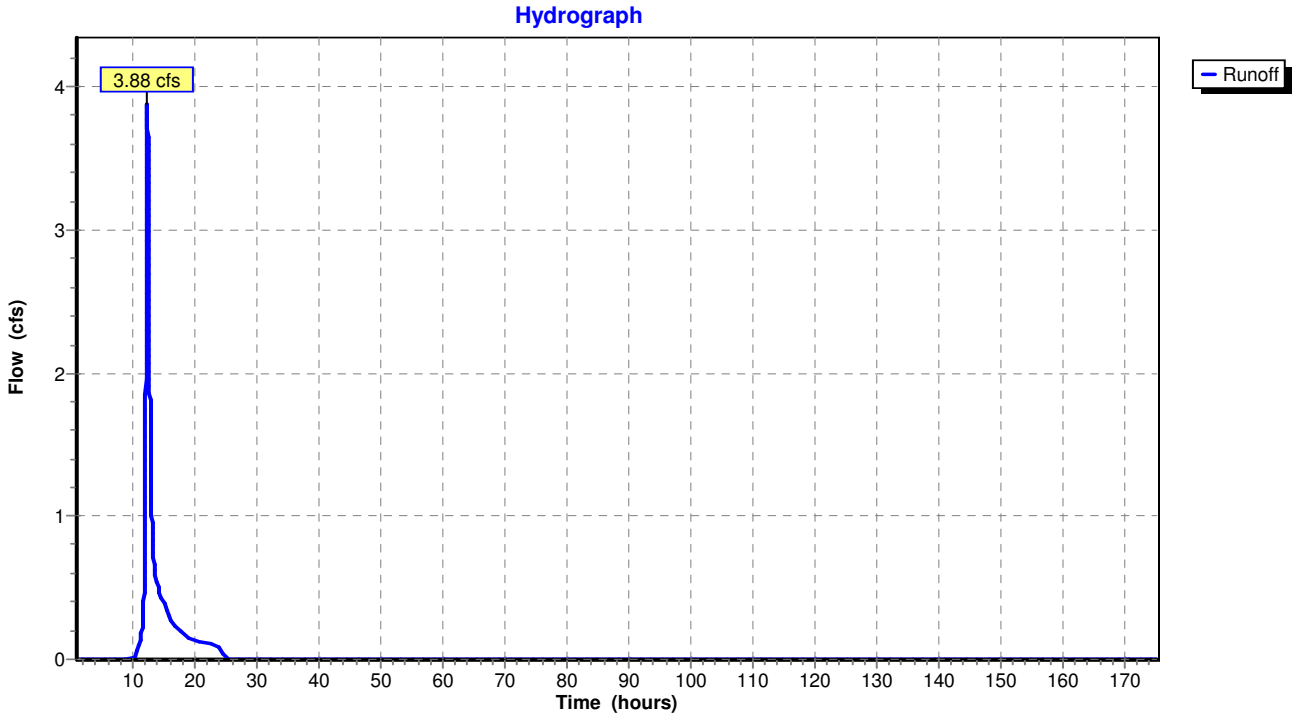
Runoff = 3.88 cfs @ 12.35 hrs, Volume= 0.455 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.50"

Area (ac)	CN	Description
2.800	79	1 acre lots, 20% imp, HSG C
1.200	70	Woods, Good, HSG C
4.000	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.8	1,530	0.0700	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	1,630	Total			

Subcatchment 3.4:



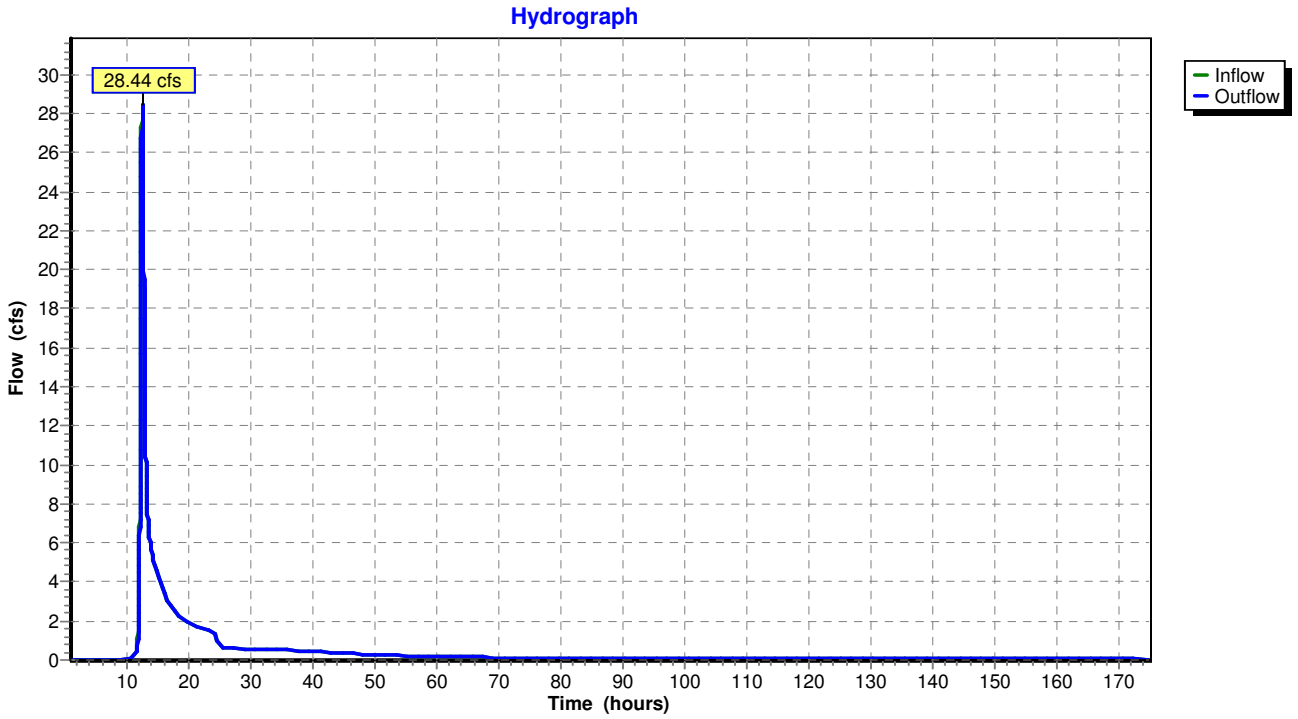
Reach Design Line 3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 49.100 ac, Inflow Depth > 1.54" for 2-year event
Inflow = 28.44 cfs @ 12.52 hrs, Volume= 6.312 af
Outflow = 28.44 cfs @ 12.53 hrs, Volume= 6.312 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Line 3:



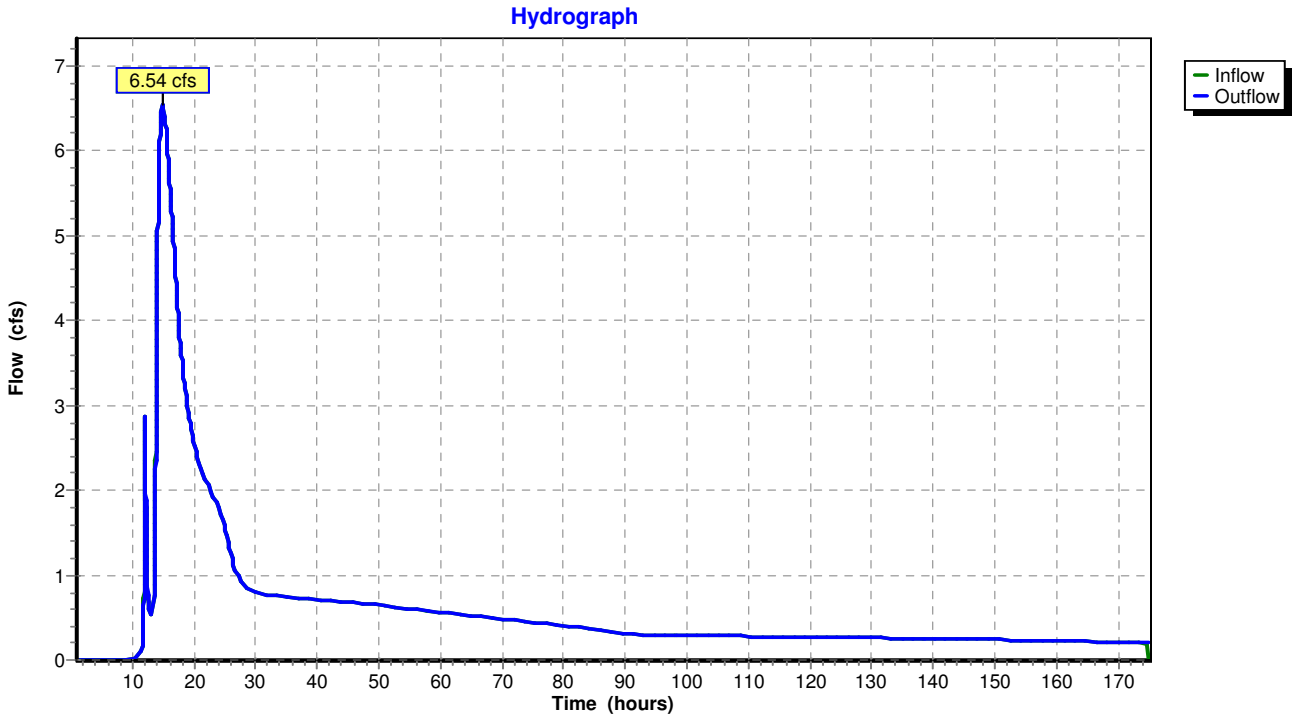
Reach Design Point 1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 50.900 ac, Inflow Depth > 1.96" for 2-year event
Inflow = 6.54 cfs @ 14.90 hrs, Volume= 8.301 af
Outflow = 6.54 cfs @ 14.91 hrs, Volume= 8.301 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 1:



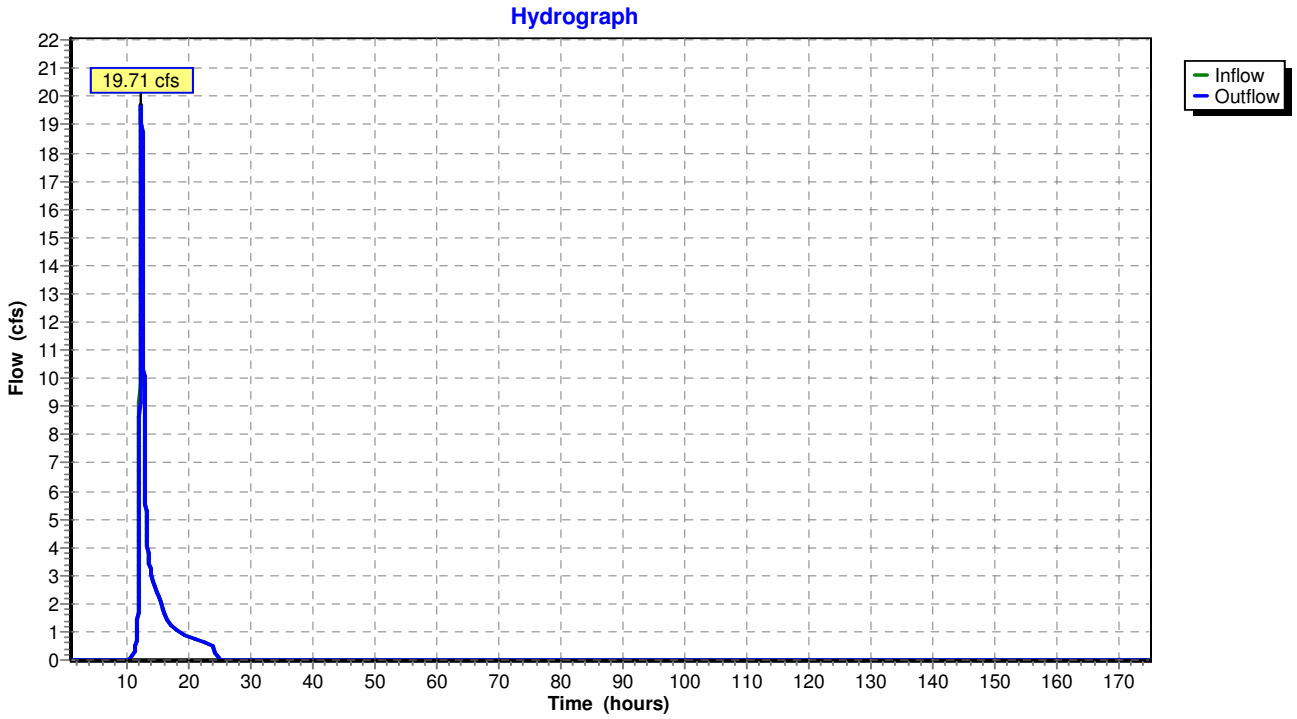
Reach Design Point 2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 26.100 ac, Inflow Depth = 1.12" for 2-year event
Inflow = 19.71 cfs @ 12.38 hrs, Volume= 2.438 af
Outflow = 19.71 cfs @ 12.39 hrs, Volume= 2.438 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 2:



Pond 1.1P:

Inflow Area = 35.500 ac, Inflow Depth = 2.18" for 2-year event
Inflow = 63.79 cfs @ 12.25 hrs, Volume= 6.456 af
Outflow = 28.34 cfs @ 12.61 hrs, Volume= 6.377 af, Atten= 56%, Lag= 22.0 min
Primary = 22.42 cfs @ 12.61 hrs, Volume= 6.211 af
Secondary = 5.92 cfs @ 12.61 hrs, Volume= 0.166 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 780.20' Surf.Area= 33,940 sf Storage= 102,450 cf
Peak Elev= 783.19' @ 12.61 hrs Surf.Area= 51,535 sf Storage= 231,804 cf (129,354 cf above start)
Plug-Flow detention time= 2,110.7 min calculated for 4.025 af (62% of inflow)
Center-of-Mass det. time= 1,253.2 min (2,079.5 - 826.4)

Volume	Invert	Avail.Storage	Storage Description
#1	773.00'	348,200 cf	**Custom Stage Data (Prismatic)** Listed below

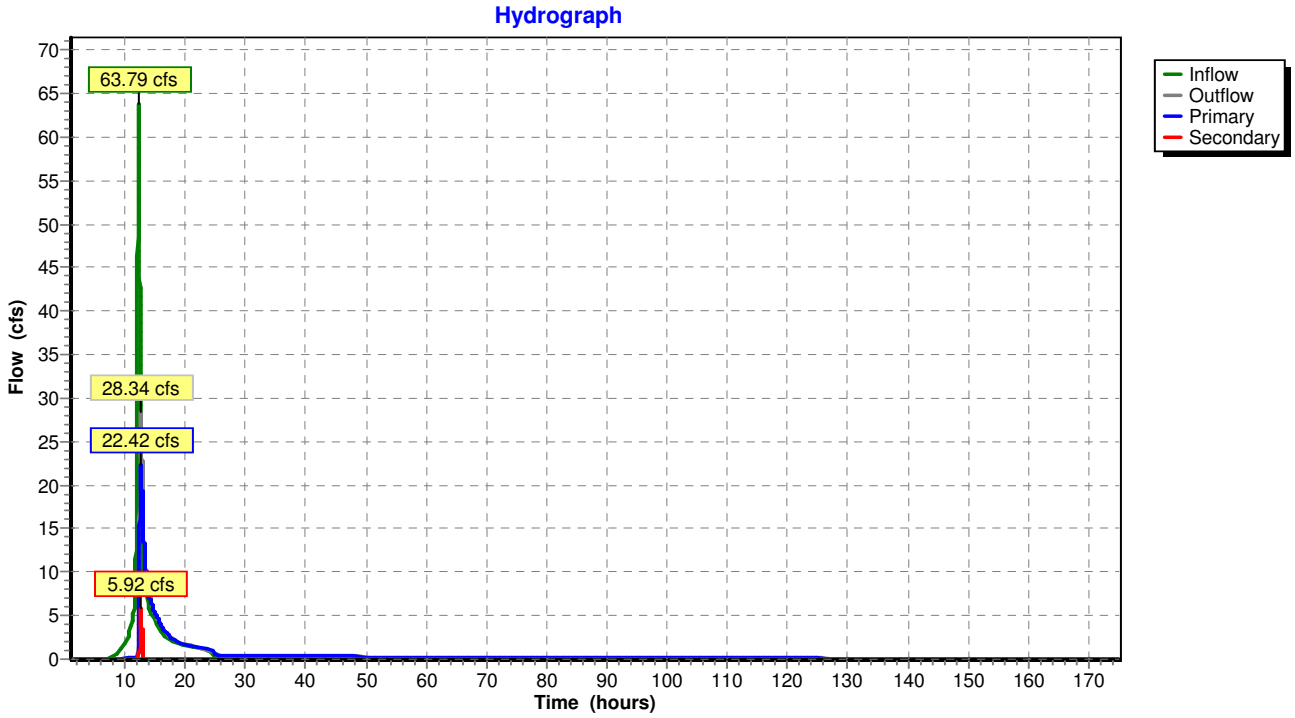
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
773.00	700	0	0
774.00	3,200	1,950	1,950
776.00	10,300	13,500	15,450
778.00	18,100	28,400	43,850
780.00	32,800	50,900	94,750
782.00	44,200	77,000	171,750
784.00	56,500	100,700	272,450
785.00	63,000	59,750	332,200
785.25	65,000	16,000	348,200

Device	Routing	Invert	Outlet Devices
#1	Primary	780.20'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	783.00'	**25.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	782.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=22.41 cfs @ 12.61 hrs HW=783.19' TW=771.42' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.40 cfs @ 8.2 fps)
└—**3=Broad-Crested Rectangular Weir** (Weir Controls 22.01 cfs @ 2.6 fps)

Secondary OutFlow Max=5.92 cfs @ 12.61 hrs HW=783.19' TW=771.42' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 5.92 cfs @ 1.2 fps)

Pond 1.1P:


Hydrograph
63.79 cfs
28.34 cfs
22.42 cfs
5.92 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.2P:

Inflow Area = 36.600 ac, Inflow Depth > 2.13" for 2-year event
Inflow = 28.58 cfs @ 12.61 hrs, Volume= 6.490 af
Outflow = 16.89 cfs @ 12.97 hrs, Volume= 6.361 af, Atten= 41%, Lag= 21.5 min
Primary = 0.23 cfs @ 12.97 hrs, Volume= 2.206 af
Secondary = 16.67 cfs @ 12.97 hrs, Volume= 4.155 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 770.00' Surf.Area= 12,900 sf Storage= 33,300 cf
Peak Elev= 772.34' @ 12.97 hrs Surf.Area= 18,695 sf Storage= 71,025 cf (37,725 cf above start)
Plug-Flow detention time= 1,484.9 min calculated for 5.596 af (86% of inflow)
Center-of-Mass det. time= 538.7 min (2,596.8 - 2,058.1)

Volume	Invert	Avail.Storage	Storage Description
#1	766.00'	156,300 cf	**Custom Stage Data (Prismatic)** Listed below

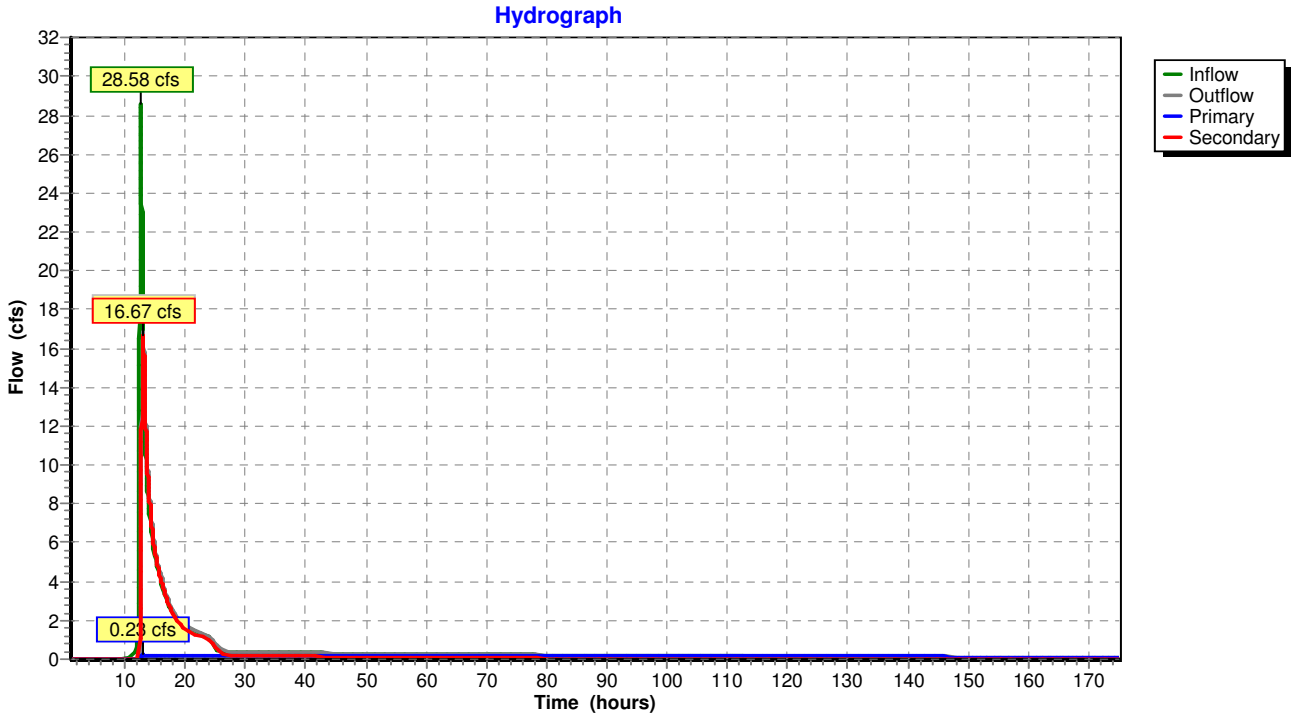
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
766.00	4,000	0	0
768.00	8,200	12,200	12,200
770.00	12,900	21,100	33,300
772.00	17,800	30,700	64,000
774.00	23,000	40,800	104,800
776.00	28,500	51,500	156,300

Device	Routing	Invert	Outlet Devices
#1	Primary	770.00'	**2.4" Vert. Orifice/Grate** C= 0.600
#2	Secondary	771.50'	**6.5' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.23 cfs @ 12.97 hrs HW=772.34' TW=757.47' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.23 cfs @ 7.2 fps)

Secondary OutFlow Max=16.66 cfs @ 12.97 hrs HW=772.34' TW=757.47' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 16.66 cfs @ 3.0 fps)

Pond 1.2P:


Hydrograph
28.58 cfs
16.67 cfs
0.23 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.3P:

Inflow Area = 10.900 ac, Inflow Depth = 2.27" for 2-year event
Inflow = 20.75 cfs @ 12.23 hrs, Volume= 2.061 af
Outflow = 0.45 cfs @ 20.47 hrs, Volume= 2.057 af, Atten= 98%, Lag= 494.6 min
Primary = 0.45 cfs @ 20.47 hrs, Volume= 2.057 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 763.50' Surf.Area= 12,775 sf Storage= 36,875 cf
Peak Elev= 767.18' @ 20.47 hrs Surf.Area= 25,636 sf Storage= 107,396 cf (70,521 cf above start)
Plug-Flow detention time= 2,831.5 min calculated for 1.210 af (59% of inflow)
Center-of-Mass det. time= 1,837.8 min (2,659.6 - 821.7)

Volume	Invert	Avail.Storage	Storage Description
#1	758.00'	194,200 cf	**Custom Stage Data (Prismatic)** Listed below

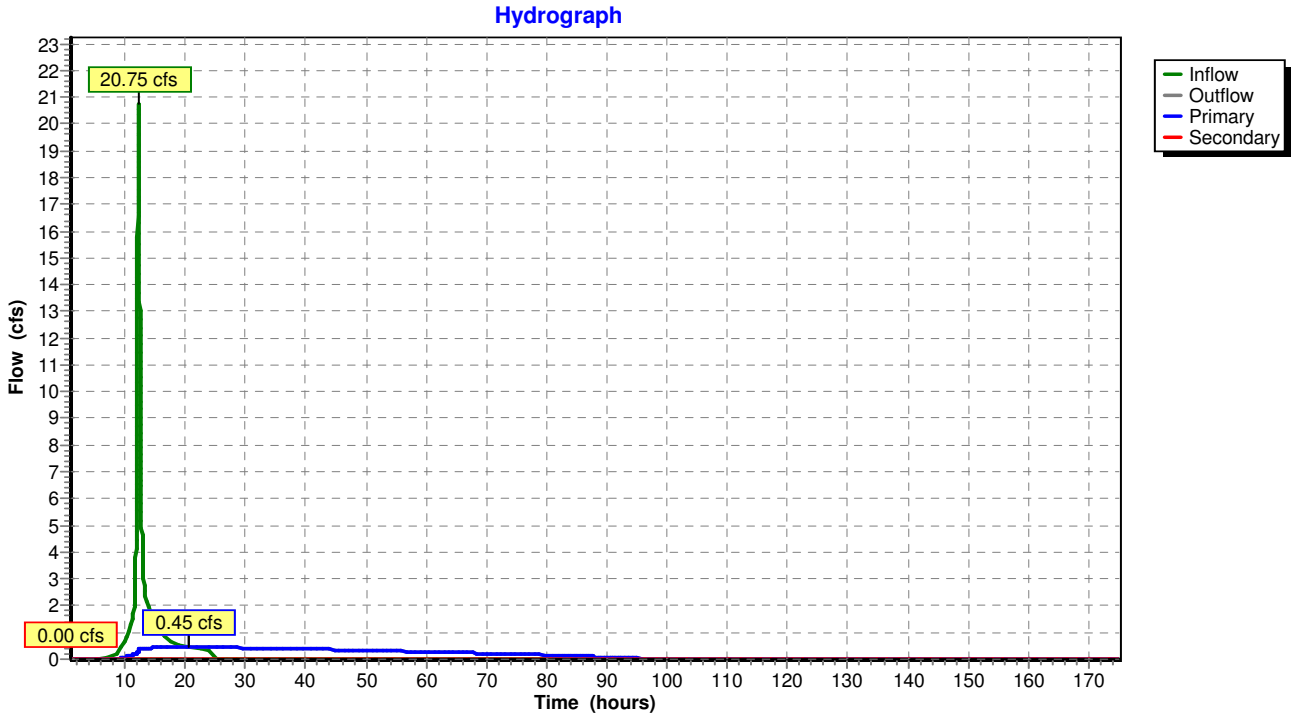
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
758.00	2,900	0	0
760.00	4,900	7,800	7,800
762.00	7,600	12,500	20,300
764.00	14,500	22,100	42,400
766.00	21,100	35,600	78,000
768.00	28,800	49,900	127,900
770.00	37,500	66,300	194,200

Device	Routing	Invert	Outlet Devices
#1	Primary	763.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	767.50'	**2.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.45 cfs @ 20.47 hrs HW=767.18' TW=759.74' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 9.1 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=763.50' TW=756.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.3P:


Hydrograph
20.75 cfs
0.45 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.4P:

Inflow Area = 48.900 ac, Inflow Depth > 2.10" for 2-year event
Inflow = 17.52 cfs @ 12.97 hrs, Volume= 8.562 af
Outflow = 6.36 cfs @ 14.92 hrs, Volume= 8.095 af, Atten= 64%, Lag= 116.8 min
Primary = 0.33 cfs @ 14.92 hrs, Volume= 3.708 af
Secondary = 6.03 cfs @ 14.92 hrs, Volume= 4.386 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 756.00' Surf.Area= 9,900 sf Storage= 20,400 cf
Peak Elev= 760.19' @ 14.92 hrs Surf.Area= 23,223 sf Storage= 90,389 cf (69,989 cf above start)
Plug-Flow detention time= 1,595.8 min calculated for 7.626 af (89% of inflow)
Center-of-Mass det. time= 791.1 min (3,373.5 - 2,582.3)

Volume	Invert	Avail.Storage	Storage Description
#1	752.00'	276,000 cf	**Custom Stage Data (Prismatic)** Listed below

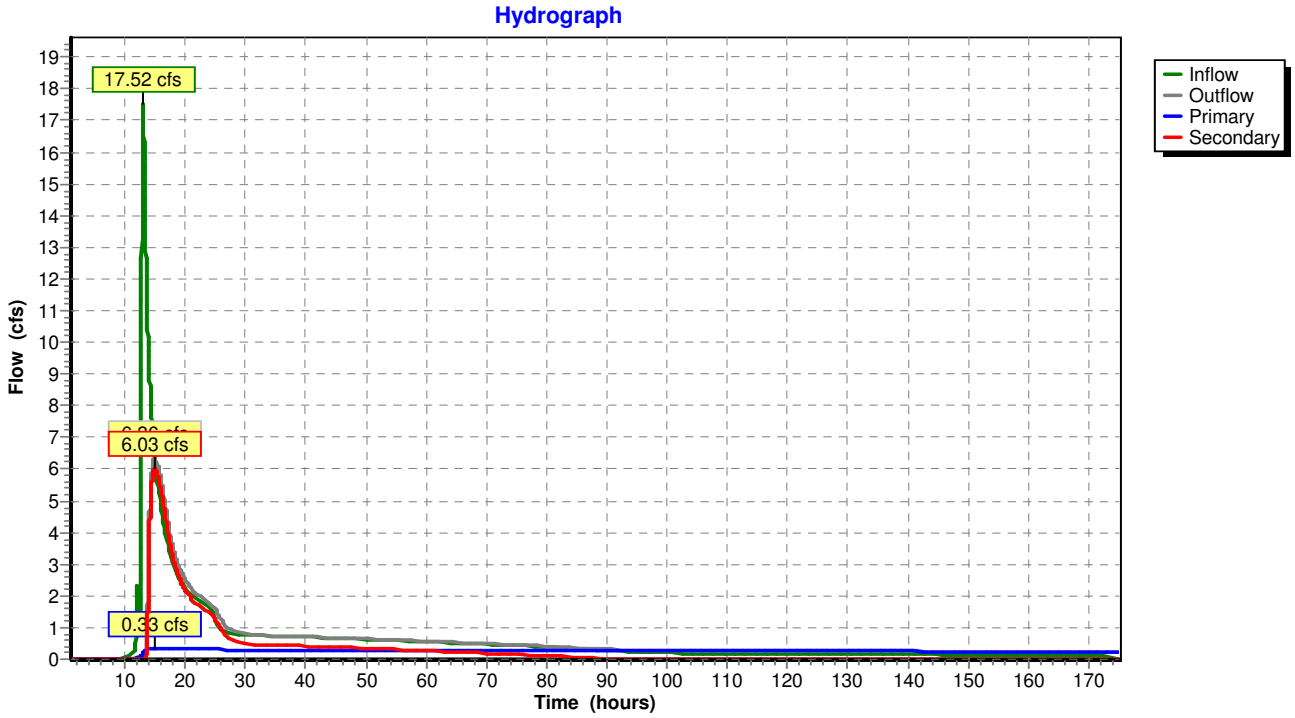
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
752.00	900	0	0
754.00	4,800	5,700	5,700
756.00	9,900	14,700	20,400
758.00	16,300	26,200	46,600
760.00	22,600	38,900	85,500
762.00	29,200	51,800	137,300
764.00	34,700	63,900	201,200
766.00	40,100	74,800	276,000

Device	Routing	Invert	Outlet Devices
#1	Secondary	759.25'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	756.00'	**2.5" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.33 cfs @ 14.92 hrs HW=760.19' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 0.33 cfs @ 9.7 fps)

Secondary OutFlow Max=6.03 cfs @ 14.92 hrs HW=760.19' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 6.03 cfs @ 3.2 fps)

Pond 1.4P:


Hydrograph
17.52 cfs
6.03 cfs
0.33 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.1P:

Inflow Area = 10.400 ac, Inflow Depth = 1.71" for 2-year event
Inflow = 14.92 cfs @ 12.24 hrs, Volume= 1.481 af
Outflow = 0.48 cfs @ 18.18 hrs, Volume= 1.477 af, Atten= 97%, Lag= 356.5 min
Primary = 0.48 cfs @ 18.18 hrs, Volume= 1.477 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 718.00' Surf.Area= 9,500 sf Storage= 21,600 cf
Peak Elev= 720.93' @ 18.18 hrs Surf.Area= 22,036 sf Storage= 67,992 cf (46,392 cf above start)
Plug-Flow detention time= 1,769.9 min calculated for 0.981 af (66% of inflow)
Center-of-Mass det. time= 1,193.8 min (2,039.1 - 845.3)

Volume	Invert	Avail.Storage	Storage Description
#1	714.00'	157,600 cf	**Custom Stage Data (Prismatic)** Listed below

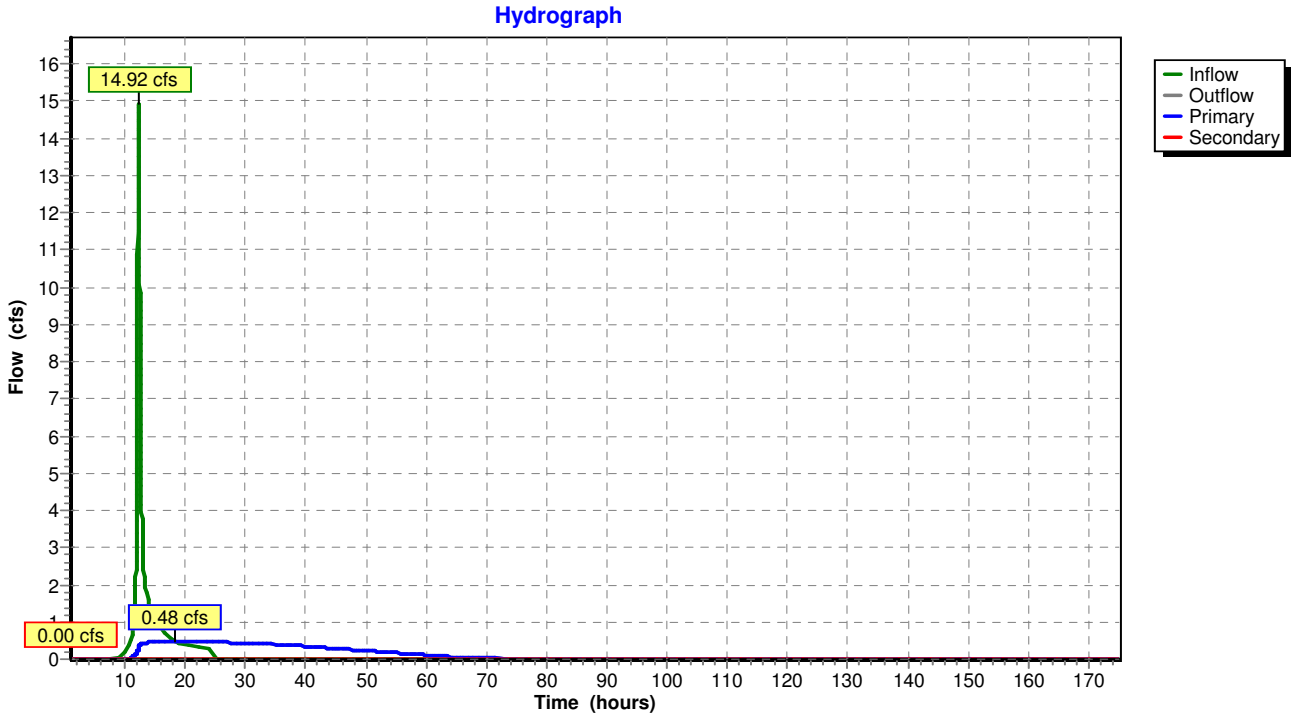
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.00	2,500	0	0
716.00	4,800	7,300	7,300
718.00	9,500	14,300	21,600
720.00	16,000	25,500	47,100
722.00	29,000	45,000	92,100
724.00	36,500	65,500	157,600

Device	Routing	Invert	Outlet Devices
#1	Primary	718.00'	**3.3" Vert. Orifice/Grate** C= 0.600
#2	Secondary	722.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.48 cfs @ 18.18 hrs HW=720.93' TW=673.61' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.48 cfs @ 8.0 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=718.00' TW=671.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3.1P:


Hydrograph
14.92 cfs
0.48 cfs
0.00 cfs
Flow (cfs)
Time (hours)
Inflow
Outflow
Primary
Secondary

Pond 3.2P:

Inflow Area = 35.400 ac, Inflow Depth = 1.71" for 2-year event
Inflow = 32.62 cfs @ 12.30 hrs, Volume= 5.036 af
Outflow = 23.24 cfs @ 12.54 hrs, Volume= 4.951 af, Atten= 29%, Lag= 14.4 min
Primary = 0.15 cfs @ 12.54 hrs, Volume= 1.440 af
Secondary = 23.09 cfs @ 12.54 hrs, Volume= 3.511 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 671.00' Surf.Area= 11,400 sf Storage= 24,850 cf
Peak Elev= 674.10' @ 12.54 hrs Surf.Area= 22,465 sf Storage= 76,189 cf (51,339 cf above start)
Plug-Flow detention time= 1,460.0 min calculated for 4.381 af (87% of inflow)
Center-of-Mass det. time= 1,016.8 min (2,215.5 - 1,198.7)

Volume	Invert	Avail.Storage	Storage Description
#1	666.00'	124,850 cf	**Custom Stage Data (Prismatic)** Listed below

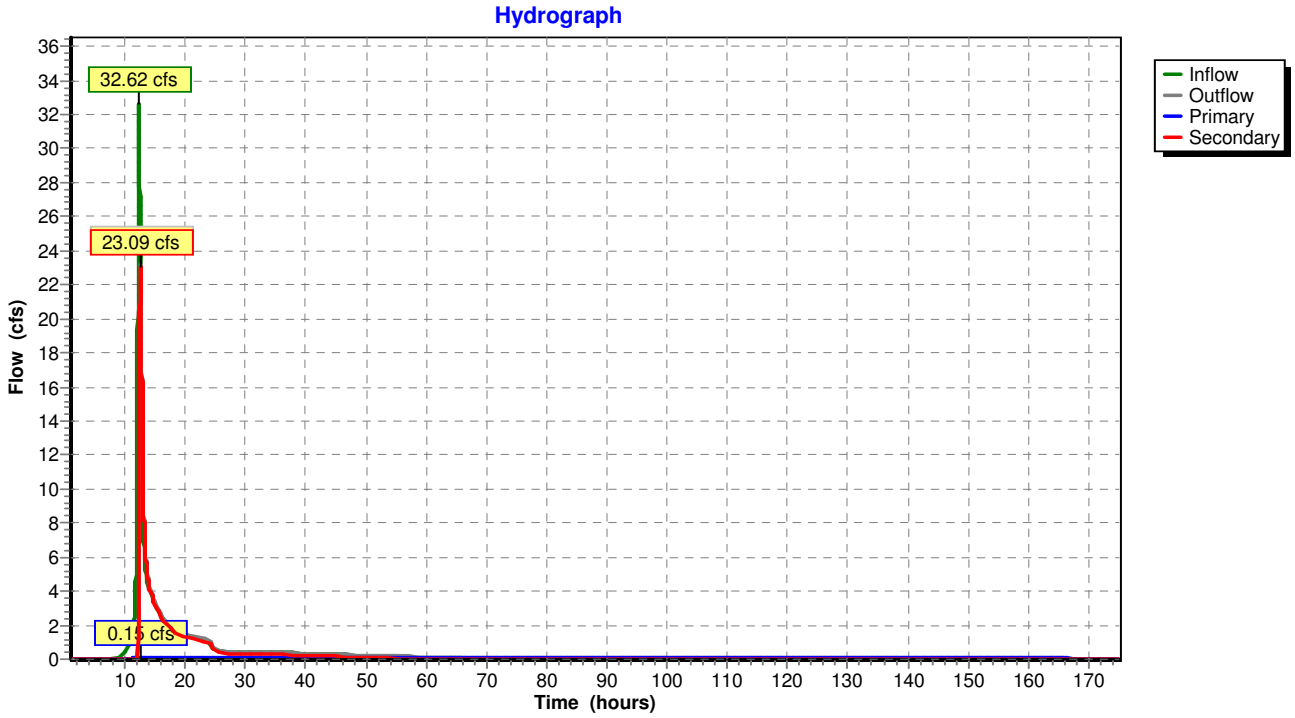
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
666.00	450	0	0
668.00	2,700	3,150	3,150
670.00	7,600	10,300	13,450
672.00	15,200	22,800	36,250
674.00	22,100	37,300	73,550
676.00	29,200	51,300	124,850

Device	Routing	Invert	Outlet Devices
#1	Primary	671.00'	**1.8" Vert. Orifice/Grate** C= 0.600
#2	Secondary	673.50'	**16.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.15 cfs @ 12.54 hrs HW=674.10' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.15 cfs @ 8.4 fps)

Secondary OutFlow Max=23.09 cfs @ 12.54 hrs HW=674.10' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 23.09 cfs @ 2.4 fps)

Pond 3.2P:


Hydrograph
32.62 cfs
23.09 cfs
0.15 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.4P:

Inflow Area = 4.000 ac, Inflow Depth = 1.37" for 2-year event
Inflow = 3.88 cfs @ 12.35 hrs, Volume= 0.455 af
Outflow = 0.33 cfs @ 15.58 hrs, Volume= 0.454 af, Atten= 91%, Lag= 194.1 min
Primary = 0.16 cfs @ 15.58 hrs, Volume= 0.414 af
Secondary = 0.17 cfs @ 15.58 hrs, Volume= 0.041 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 754.00' Surf.Area= 4,300 sf Storage= 8,000 cf
Peak Elev= 756.07' @ 15.58 hrs Surf.Area= 7,612 sf Storage= 20,472 cf (12,472 cf above start)
Plug-Flow detention time= 1,524.0 min calculated for 0.270 af (59% of inflow)
Center-of-Mass det. time= 909.6 min (1,776.8 - 867.3)

Volume	Invert	Avail.Storage	Storage Description
#1	750.00'	37,800 cf	**Custom Stage Data (Prismatic)** Listed below

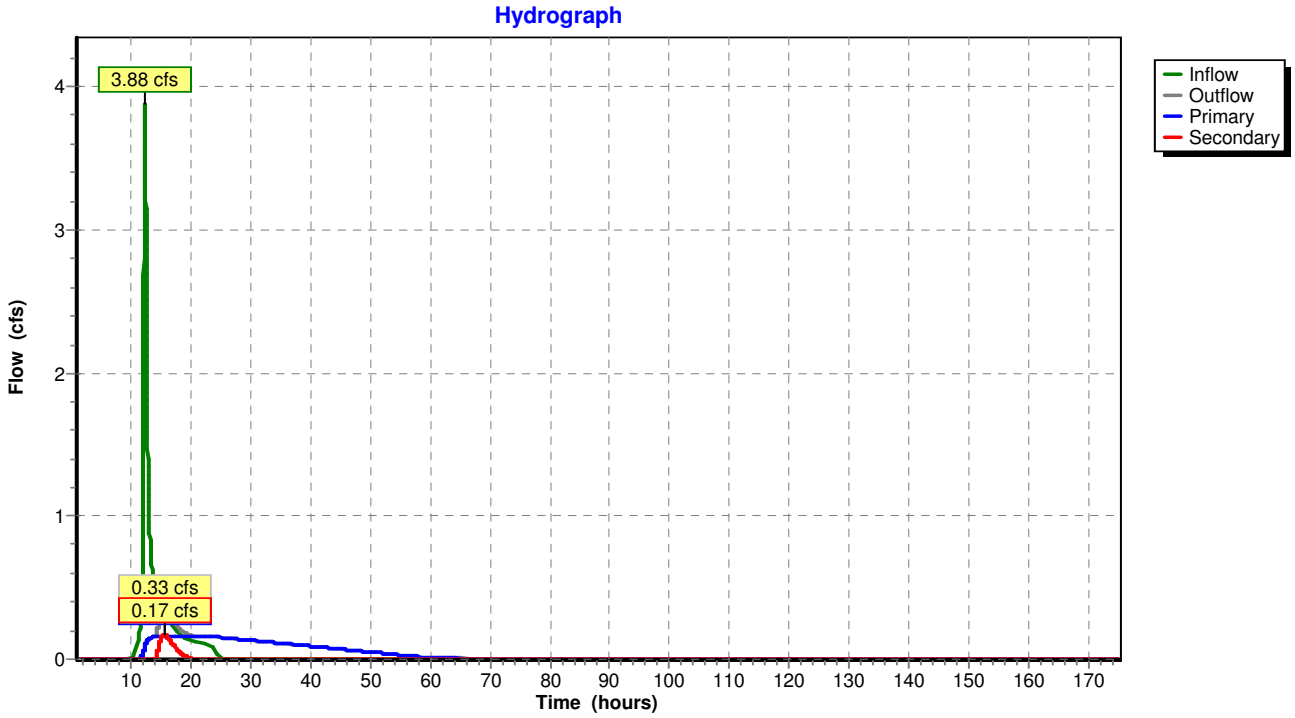
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
750.00	500	0	0
752.00	1,600	2,100	2,100
754.00	4,300	5,900	8,000
756.00	7,500	11,800	19,800
758.00	10,500	18,000	37,800

Device	Routing	Invert	Outlet Devices
#1	Primary	754.00'	**2.1" Vert. Orifice/Grate** C= 0.600
#2	Secondary	756.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.16 cfs @ 15.58 hrs HW=756.07' TW=0.00' (Dynamic Tailwater)
1=Orifice/Grate (Orifice Controls 0.16 cfs @ 6.8 fps)

Secondary OutFlow Max=0.17 cfs @ 15.58 hrs HW=756.07' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 0.17 cfs @ 0.8 fps)

Pond 3.4P:


Hydrograph
3.88 cfs
0.33 cfs
0.17 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Subcatchment 1.1:

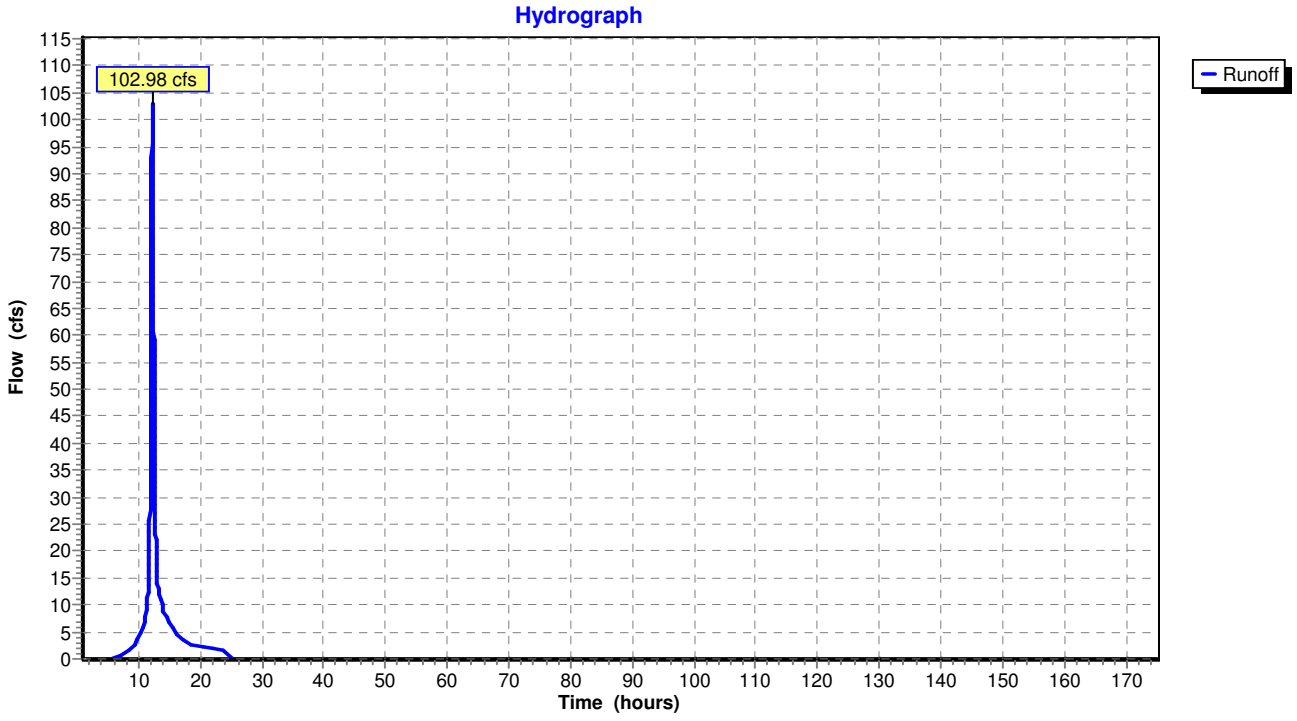
Runoff = 102.98 cfs @ 12.25 hrs, Volume= 10.553 af, Depth= 3.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
23.000	94	Suburban Shopping Center
1.300	70	Woods, Good, HSG C
1.500	79	1 acre lots, 20% imp, HSG C
9.700	74	>75% Grass cover, Good, HSG C
35.500	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.6	610	0.1000	2.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	100	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	1,200	0.0330	13.1	41.10	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
18.1	2,010	Total			

Subcatchment 1.1:



Subcatchment 1.2:

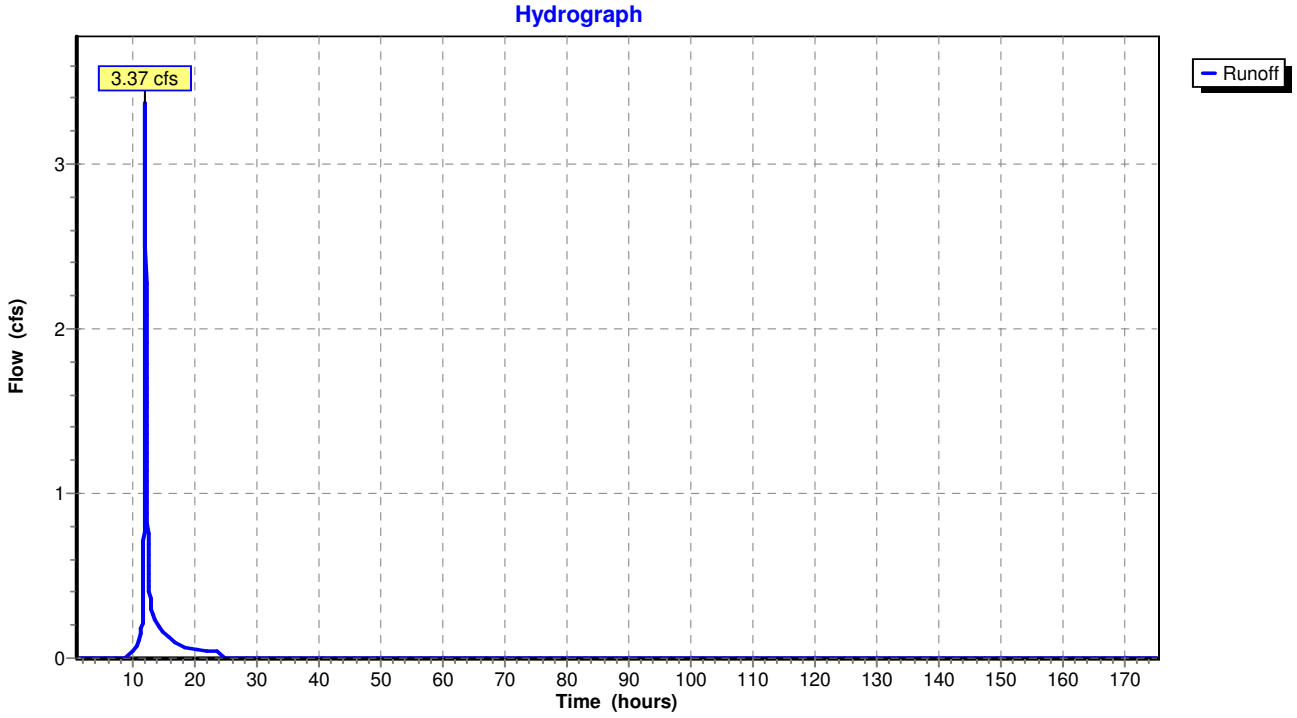
Runoff = 3.37 cfs @ 12.05 hrs, Volume= 0.217 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
1.100	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	60	0.3000	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.2:



Subcatchment 1.3:

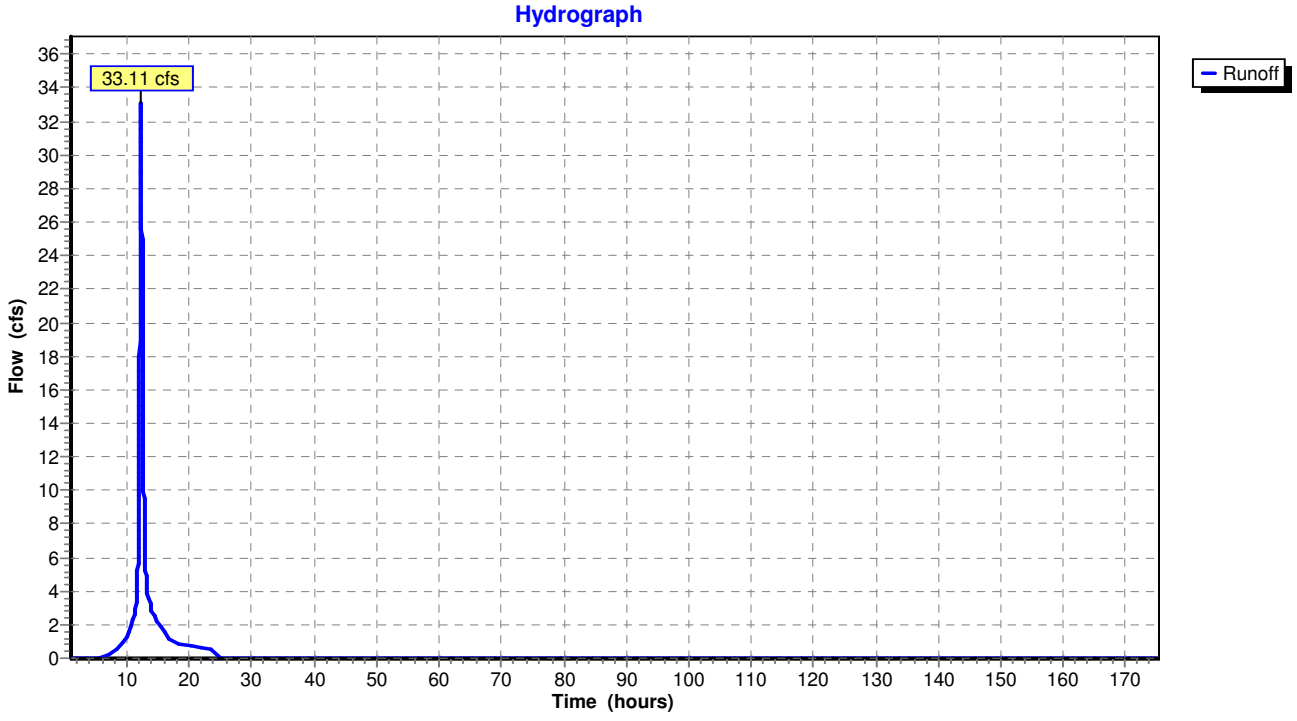
Runoff = 33.11 cfs @ 12.22 hrs, Volume= 3.333 af, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
7.400	94	Suburban Shopping Center
1.700	79	1 acre lots, 20% imp, HSG C
1.800	74	>75% Grass cover, Good, HSG C
10.900	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
7.6	875	0.0750	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	800	0.0250	11.4	35.77	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
17.1	1,775	Total			

Subcatchment 1.3:



Subcatchment 1.4:

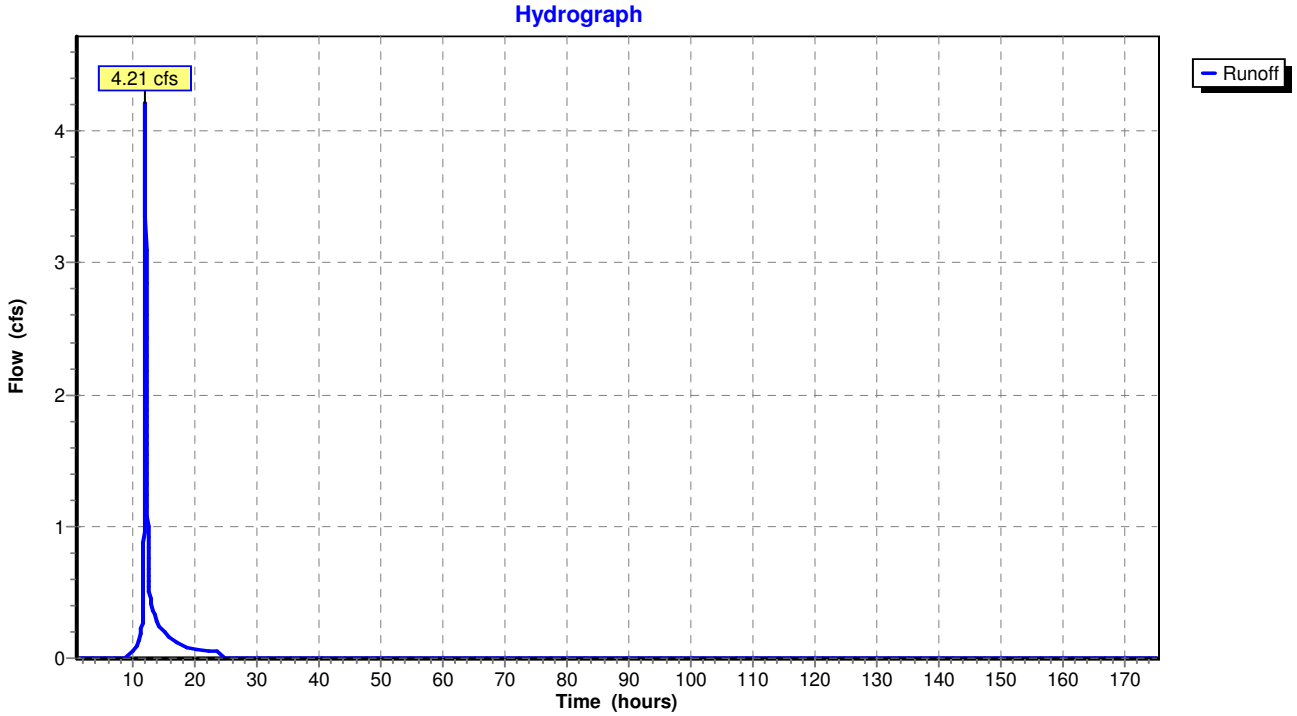
Runoff = 4.21 cfs @ 12.06 hrs, Volume= 0.276 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
1.400	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	70	0.2800	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.4:



Subcatchment 1.5:

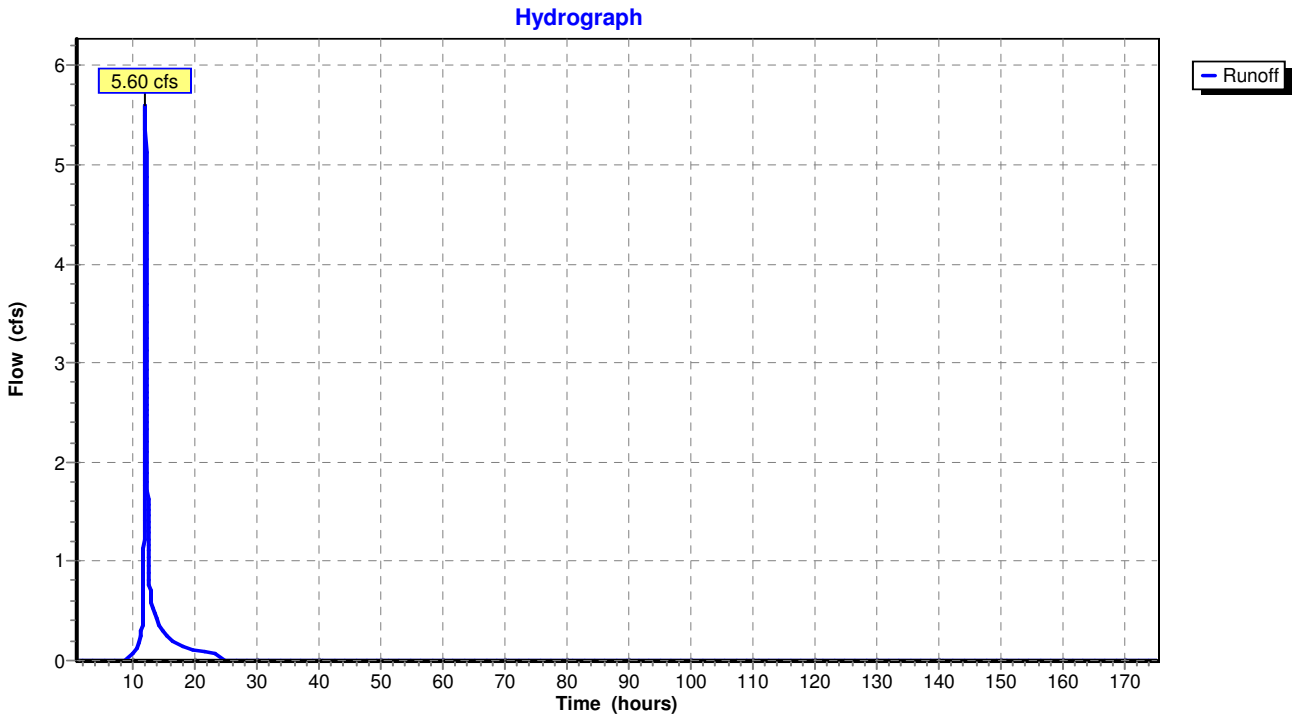
Runoff = 5.60 cfs @ 12.09 hrs, Volume= 0.394 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
2.000	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	53	0.0400	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	850	0.0200	11.0	176.03	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.0 '/' Top.W=12.00' n= 0.022 Earth, clean & straight
5.6	903	Total			

Subcatchment 1.5:



Subcatchment 2.0:

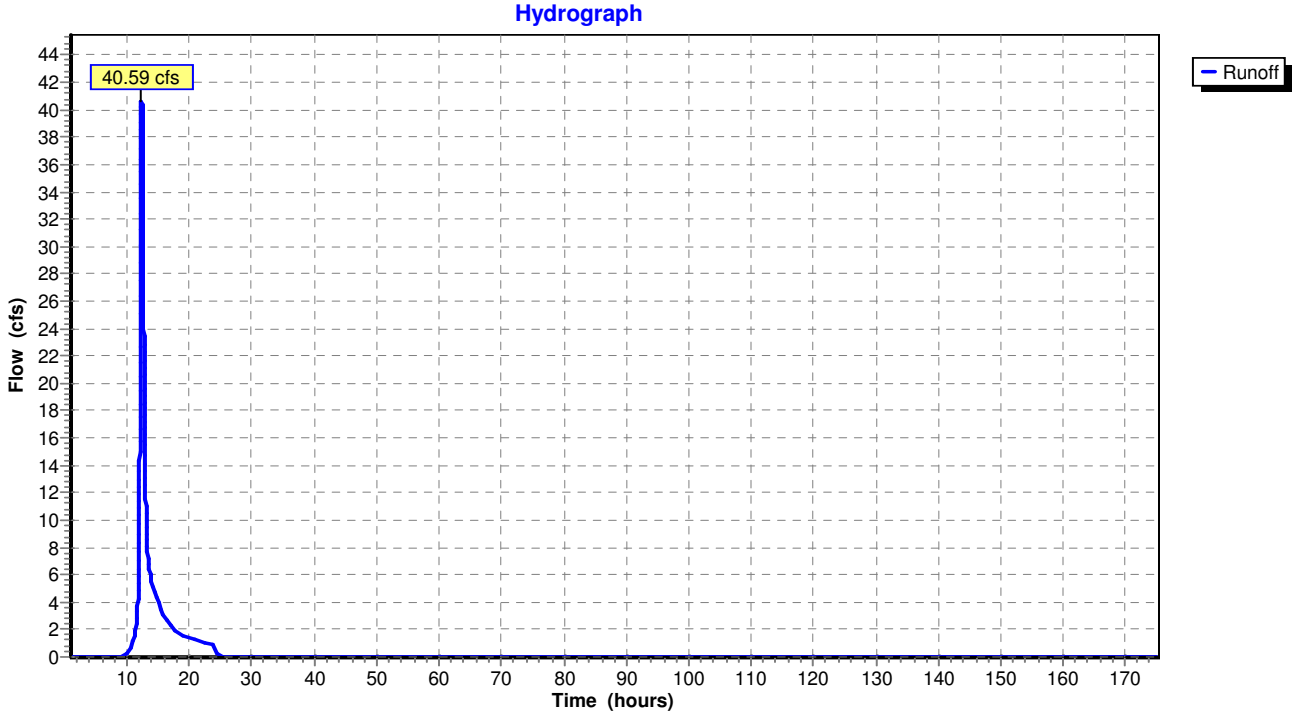
Runoff = 40.59 cfs @ 12.35 hrs, Volume= 4.780 af, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
16.000	70	Woods, Good, HSG C
10.100	74	>75% Grass cover, Good, HSG C
26.100	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.4	1,500	0.1400	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	170	0.0600	17.6	55.41	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
25.2	1,770	Total			

Subcatchment 2.0:



Subcatchment 3.1:

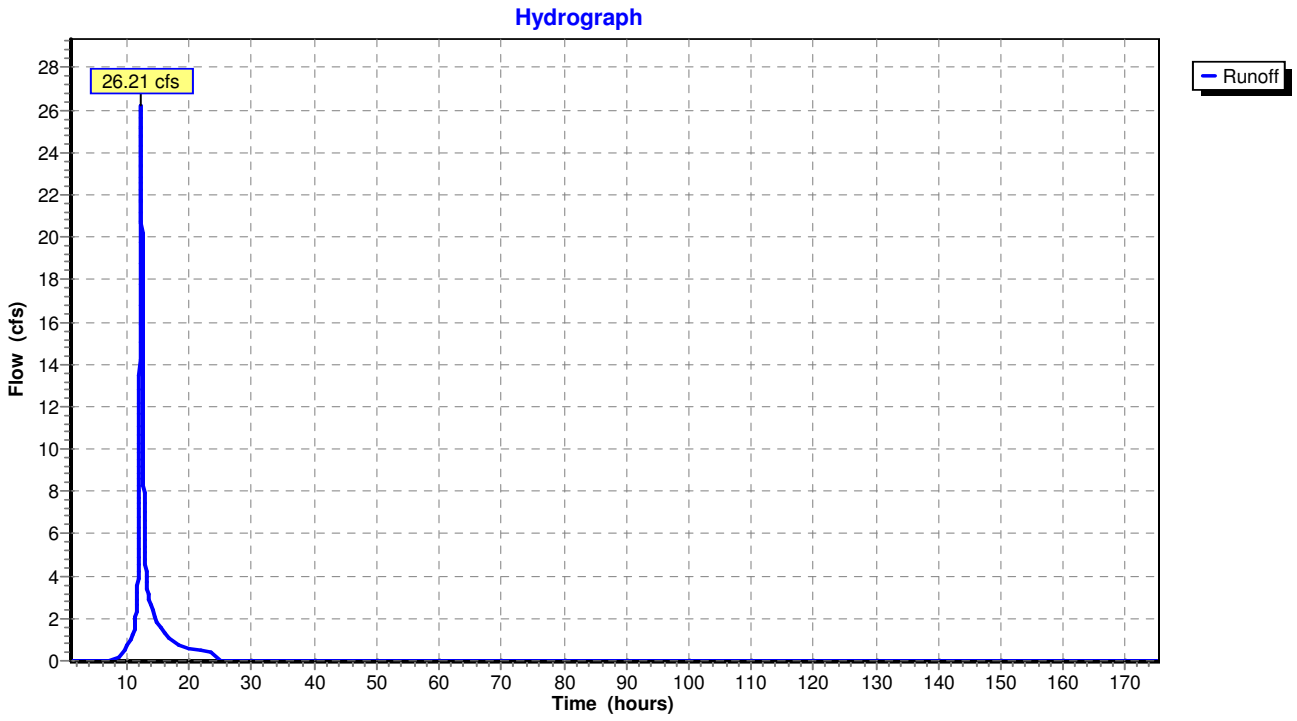
Runoff = 26.21 cfs @ 12.23 hrs, Volume= 2.587 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
3.800	94	Suburban Shopping Center
3.500	70	Woods, Good, HSG C
1.800	74	>75% Grass cover, Good, HSG C
1.300	79	1 acre lots, 20% imp, HSG C
10.400	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
8.7	1,100	0.0900	2.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	1,200	Total			

Subcatchment 3.1:



Subcatchment 3.2:

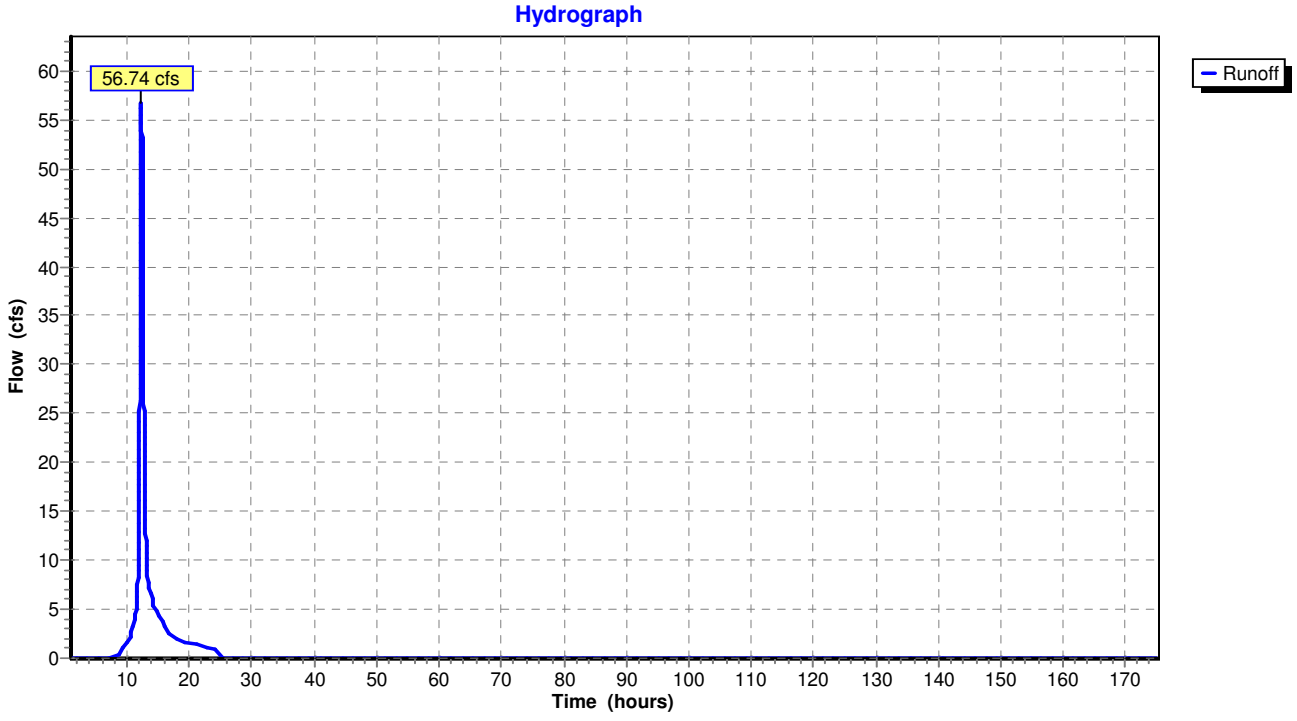
Runoff = 56.74 cfs @ 12.30 hrs, Volume= 6.219 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
1.000	70	Woods, Good, HSG C
7.500	98	Paved parking & roofs
16.500	74	>75% Grass cover, Good, HSG C
25.000	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
9.6	700	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	800	0.0500	16.1	50.59	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
22.0	1,600	Total			

Subcatchment 3.2:



Subcatchment 3.3:

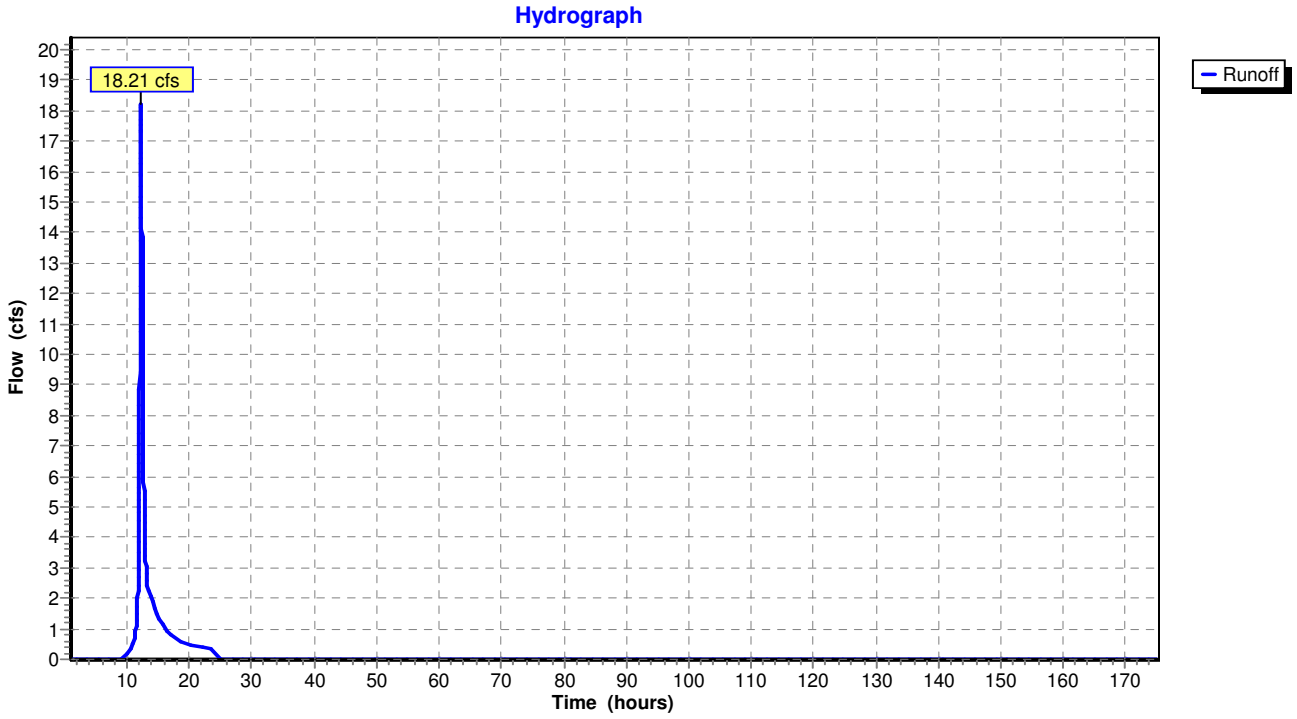
Runoff = 18.21 cfs @ 12.22 hrs, Volume= 1.777 af, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
0.700	98	Paved parking & roofs
9.000	70	Woods, Good, HSG C
9.700	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1400	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.5	780	0.1600	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.9	880	Total			

Subcatchment 3.3:



Subcatchment 3.4:

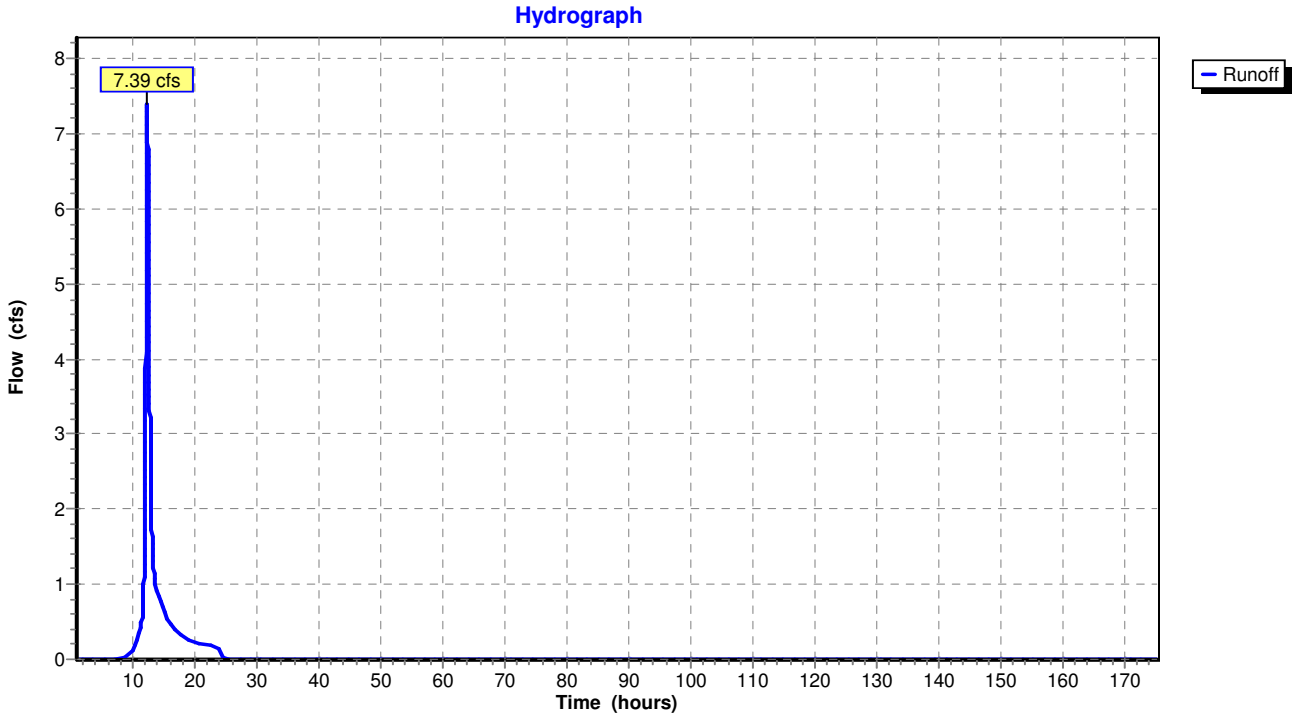
Runoff = 7.39 cfs @ 12.34 hrs, Volume= 0.845 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=5.00"

Area (ac)	CN	Description
2.800	79	1 acre lots, 20% imp, HSG C
1.200	70	Woods, Good, HSG C
4.000	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.8	1,530	0.0700	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	1,630	Total			

Subcatchment 3.4:



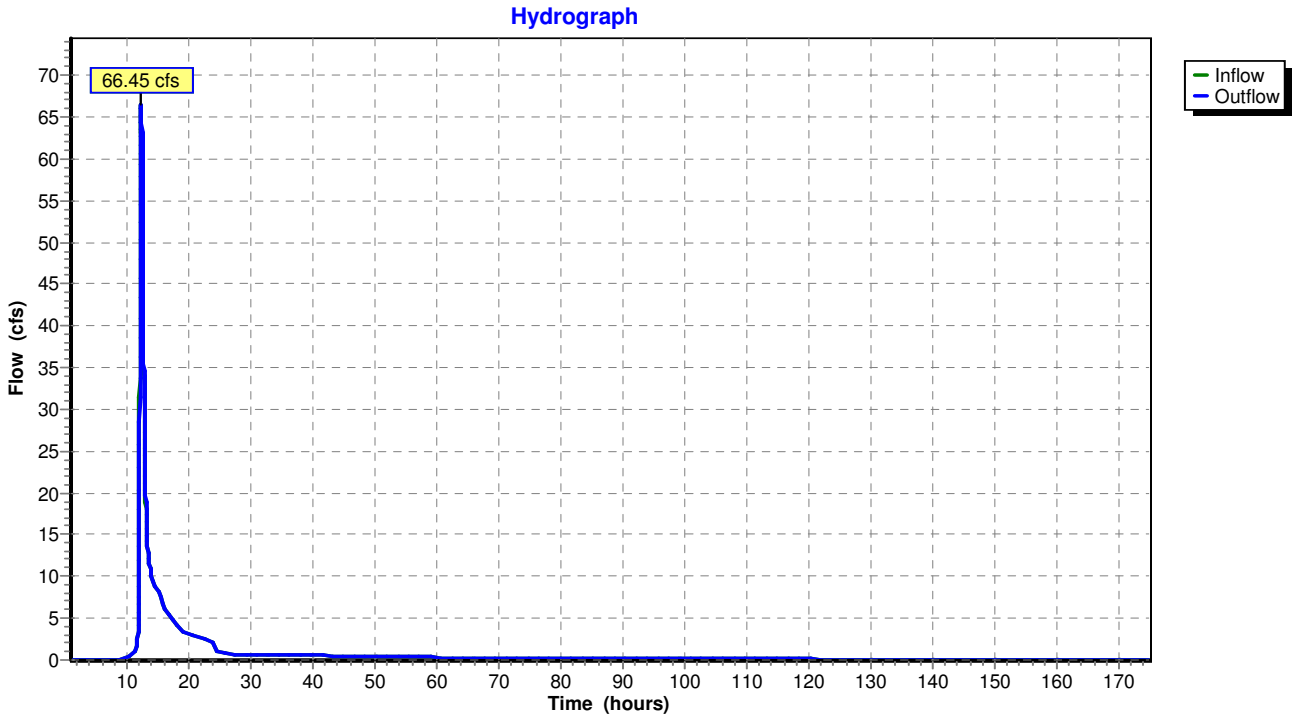
Reach Design Line 3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 49.100 ac, Inflow Depth > 2.76" for 10-year event
Inflow = 66.45 cfs @ 12.37 hrs, Volume= 11.278 af
Outflow = 66.45 cfs @ 12.38 hrs, Volume= 11.278 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Line 3:



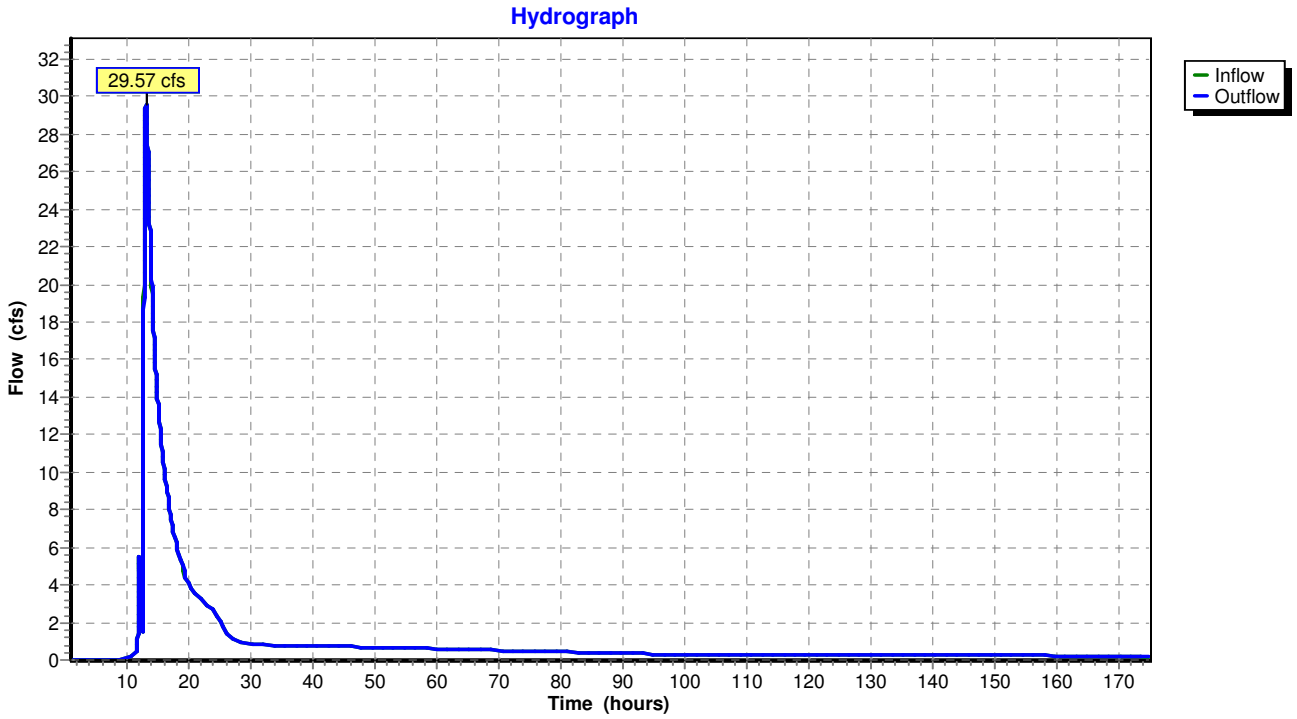
Reach Design Point 1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 50.900 ac, Inflow Depth > 3.32" for 10-year event
Inflow = 29.57 cfs @ 13.14 hrs, Volume= 14.065 af
Outflow = 29.57 cfs @ 13.15 hrs, Volume= 14.065 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 1:



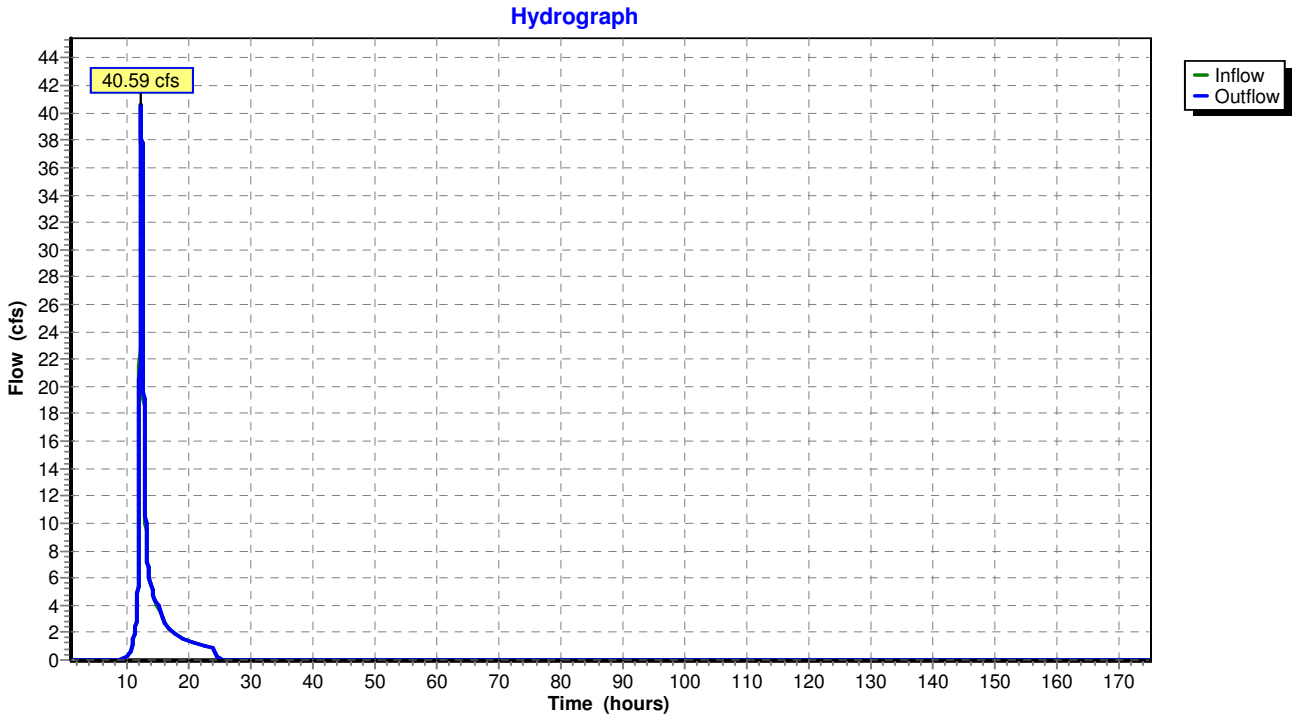
Reach Design Point 2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 26.100 ac, Inflow Depth = 2.20" for 10-year event
Inflow = 40.59 cfs @ 12.35 hrs, Volume= 4.780 af
Outflow = 40.59 cfs @ 12.36 hrs, Volume= 4.780 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 2:



Pond 1.1P:

Inflow Area = 35.500 ac, Inflow Depth = 3.57" for 10-year event
Inflow = 102.98 cfs @ 12.25 hrs, Volume= 10.553 af
Outflow = 86.37 cfs @ 12.36 hrs, Volume= 10.473 af, Atten= 16%, Lag= 7.1 min
Primary = 47.98 cfs @ 12.36 hrs, Volume= 9.047 af
Secondary = 38.40 cfs @ 12.36 hrs, Volume= 1.426 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 780.20' Surf.Area= 33,940 sf Storage= 102,450 cf
Peak Elev= 783.63' @ 12.36 hrs Surf.Area= 54,194 sf Storage= 253,575 cf (151,125 cf above start)
Plug-Flow detention time= 1,112.8 min calculated for 8.121 af (77% of inflow)
Center-of-Mass det. time= 783.4 min (1,595.8 - 812.4)

Volume	Invert	Avail.Storage	Storage Description
#1	773.00'	348,200 cf	**Custom Stage Data (Prismatic)** Listed below

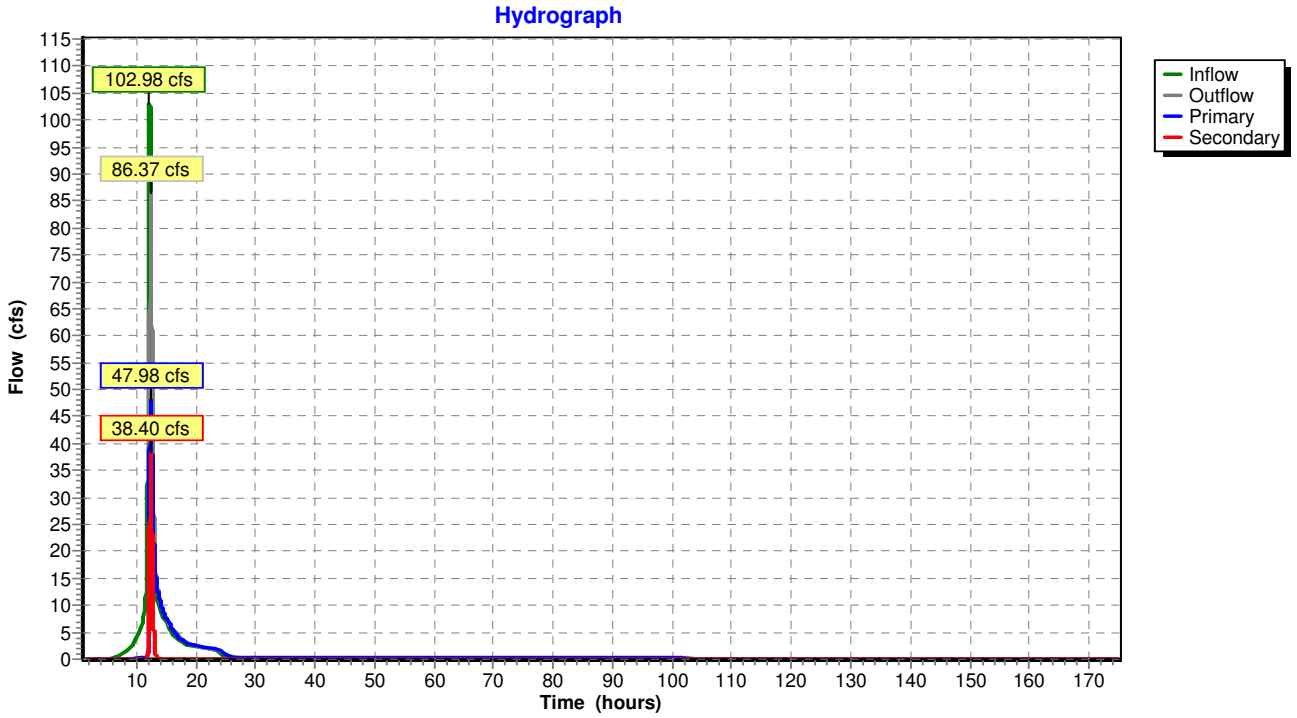
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
773.00	700	0	0
774.00	3,200	1,950	1,950
776.00	10,300	13,500	15,450
778.00	18,100	28,400	43,850
780.00	32,800	50,900	94,750
782.00	44,200	77,000	171,750
784.00	56,500	100,700	272,450
785.00	63,000	59,750	332,200
785.25	65,000	16,000	348,200

Device	Routing	Invert	Outlet Devices
#1	Primary	780.20'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	783.00'	**25.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	782.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=47.96 cfs @ 12.36 hrs HW=783.62' TW=772.86' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.43 cfs @ 8.7 fps)
└—**3=Broad-Crested Rectangular Weir** (Weir Controls 47.53 cfs @ 3.5 fps)

Secondary OutFlow Max=38.38 cfs @ 12.36 hrs HW=783.62' TW=772.86' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 38.38 cfs @ 2.5 fps)

Pond 1.1P:


Hydrograph
102.98 cfs
86.37 cfs
47.98 cfs
38.40 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.2P:

Inflow Area = 36.600 ac, Inflow Depth > 3.50" for 10-year event
Inflow = 87.42 cfs @ 12.36 hrs, Volume= 10.690 af
Outflow = 67.40 cfs @ 12.55 hrs, Volume= 10.558 af, Atten= 23%, Lag= 11.3 min
Primary = 0.28 cfs @ 12.55 hrs, Volume= 2.225 af
Secondary = 67.11 cfs @ 12.55 hrs, Volume= 8.334 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 770.00' Surf.Area= 12,900 sf Storage= 33,300 cf
Peak Elev= 773.63' @ 12.55 hrs Surf.Area= 22,040 sf Storage= 97,265 cf (63,965 cf above start)
Plug-Flow detention time= 858.8 min calculated for 9.793 af (92% of inflow)
Center-of-Mass det. time= 323.9 min (1,904.3 - 1,580.4)

Volume	Invert	Avail.Storage	Storage Description
#1	766.00'	156,300 cf	**Custom Stage Data (Prismatic)** Listed below

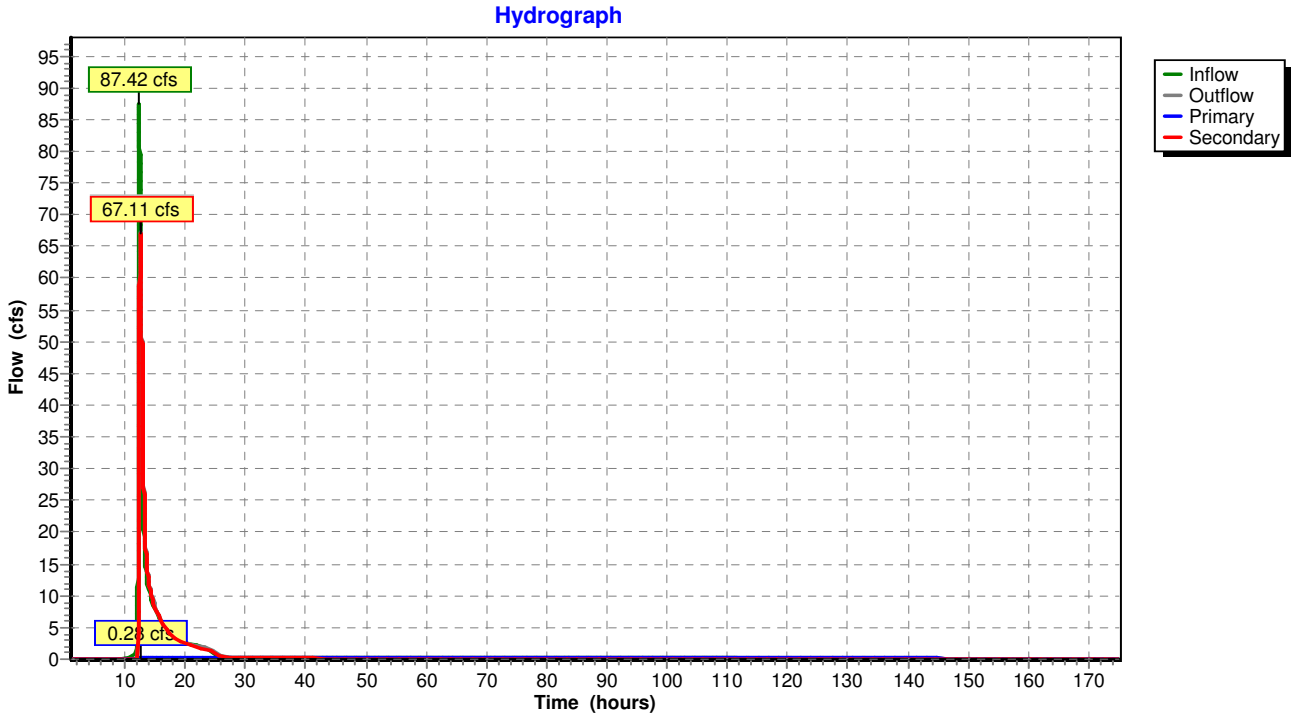
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
766.00	4,000	0	0
768.00	8,200	12,200	12,200
770.00	12,900	21,100	33,300
772.00	17,800	30,700	64,000
774.00	23,000	40,800	104,800
776.00	28,500	51,500	156,300

Device	Routing	Invert	Outlet Devices
#1	Primary	770.00'	**2.4" Vert. Orifice/Grate** C= 0.600
#2	Secondary	771.50'	**6.5' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.28 cfs @ 12.55 hrs HW=773.63' TW=759.35' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.28 cfs @ 9.0 fps)

Secondary OutFlow Max=67.11 cfs @ 12.55 hrs HW=773.63' TW=759.35' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 67.11 cfs @ 4.8 fps)

Pond 1.2P:


Hydrograph
87.42 cfs
67.11 cfs
0.28 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.3P:

Inflow Area = 10.900 ac, Inflow Depth = 3.67" for 10-year event
Inflow = 33.11 cfs @ 12.22 hrs, Volume= 3.333 af
Outflow = 3.26 cfs @ 13.64 hrs, Volume= 3.328 af, Atten= 90%, Lag= 84.9 min
Primary = 0.49 cfs @ 13.64 hrs, Volume= 2.364 af
Secondary = 2.77 cfs @ 13.64 hrs, Volume= 0.964 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 763.50' Surf.Area= 12,775 sf Storage= 36,875 cf
Peak Elev= 767.99' @ 13.64 hrs Surf.Area= 28,761 sf Storage= 127,647 cf (90,772 cf above start)
Plug-Flow detention time= 1,986.4 min calculated for 2.482 af (74% of inflow)
Center-of-Mass det. time= 1,426.2 min (2,234.4 - 808.2)

Volume	Invert	Avail.Storage	Storage Description
#1	758.00'	194,200 cf	**Custom Stage Data (Prismatic)** Listed below

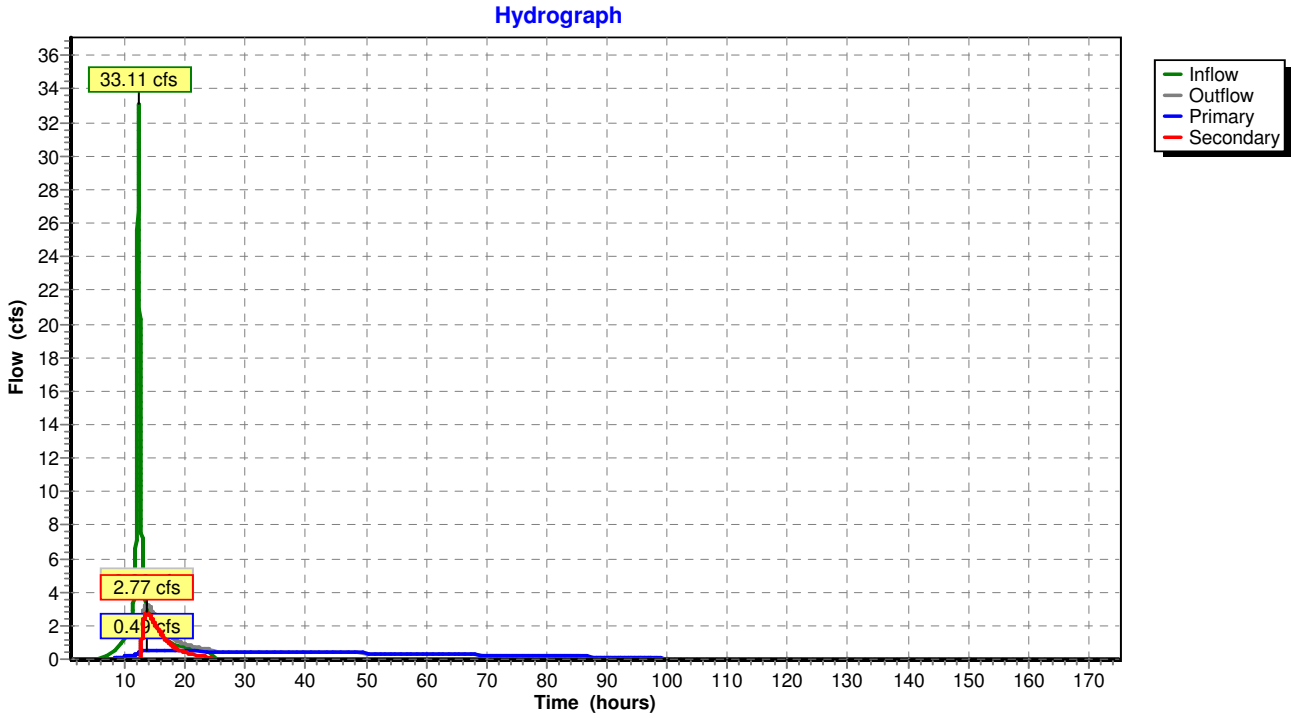
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
758.00	2,900	0	0
760.00	4,900	7,800	7,800
762.00	7,600	12,500	20,300
764.00	14,500	22,100	42,400
766.00	21,100	35,600	78,000
768.00	28,800	49,900	127,900
770.00	37,500	66,300	194,200

Device	Routing	Invert	Outlet Devices
#1	Primary	763.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	767.50'	**2.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.49 cfs @ 13.64 hrs HW=767.99' TW=761.58' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.49 cfs @ 10.1 fps)

Secondary OutFlow Max=2.77 cfs @ 13.64 hrs HW=767.99' TW=761.58' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.77 cfs @ 2.1 fps)

Pond 1.3P:


Hydrograph
33.11 cfs
2.77 cfs
0.49 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.4P:

Inflow Area = 48.900 ac, Inflow Depth > 3.48" for 10-year event
Inflow = 68.49 cfs @ 12.55 hrs, Volume= 14.162 af
Outflow = 29.05 cfs @ 13.14 hrs, Volume= 13.671 af, Atten= 58%, Lag= 35.6 min
Primary = 0.40 cfs @ 13.14 hrs, Volume= 3.778 af
Secondary = 28.65 cfs @ 13.14 hrs, Volume= 9.893 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 756.00' Surf.Area= 9,900 sf Storage= 20,400 cf
Peak Elev= 761.90' @ 13.14 hrs Surf.Area= 28,872 sf Storage= 134,726 cf (114,326 cf above start)
Plug-Flow detention time= 951.7 min calculated for 13.202 af (93% of inflow)
Center-of-Mass det. time= 464.8 min (2,425.8 - 1,961.0)

Volume	Invert	Avail.Storage	Storage Description
#1	752.00'	276,000 cf	**Custom Stage Data (Prismatic)** Listed below

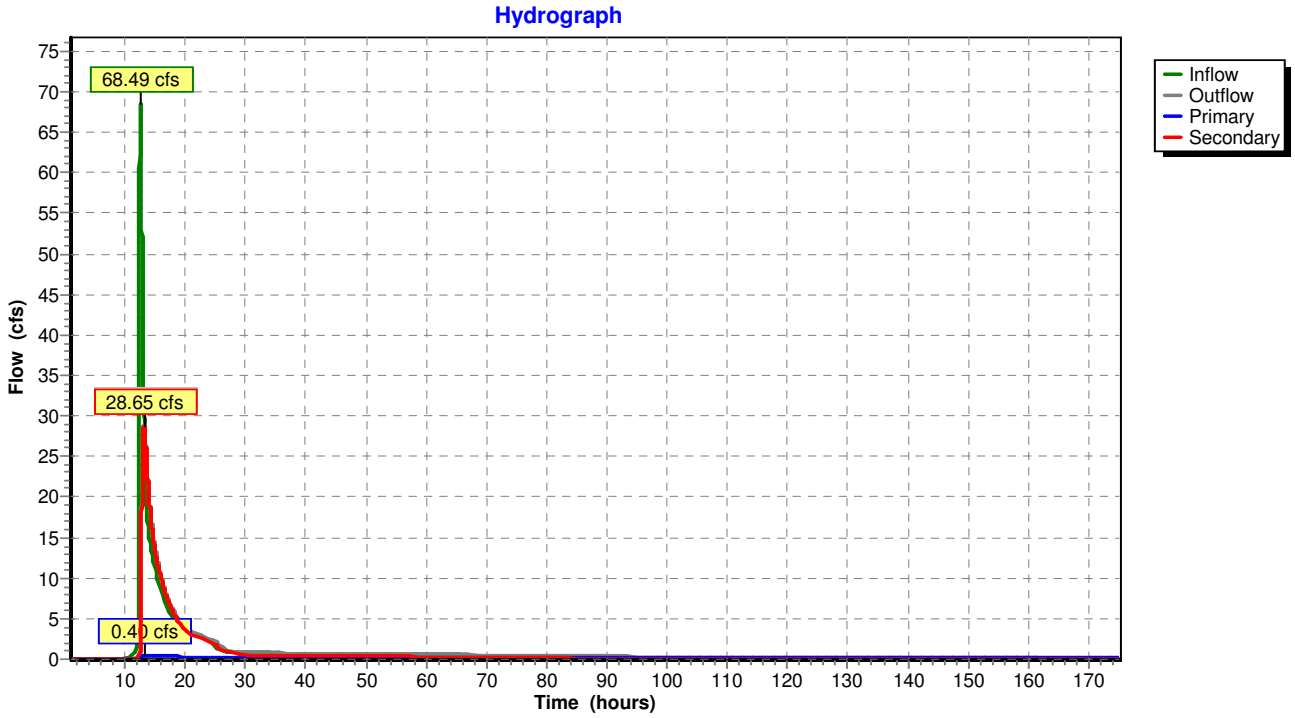
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
752.00	900	0	0
754.00	4,800	5,700	5,700
756.00	9,900	14,700	20,400
758.00	16,300	26,200	46,600
760.00	22,600	38,900	85,500
762.00	29,200	51,800	137,300
764.00	34,700	63,900	201,200
766.00	40,100	74,800	276,000

Device	Routing	Invert	Outlet Devices
#1	Secondary	759.25'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	756.00'	**2.5'' Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.40 cfs @ 13.14 hrs HW=761.90' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 0.40 cfs @ 11.6 fps)

Secondary OutFlow Max=28.65 cfs @ 13.14 hrs HW=761.90' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 28.65 cfs @ 5.4 fps)

Pond 1.4P:


Hydrograph
68.49 cfs
28.65 cfs
0.40 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.1P:

Inflow Area = 10.400 ac, Inflow Depth = 2.99" for 10-year event
Inflow = 26.21 cfs @ 12.23 hrs, Volume= 2.587 af
Outflow = 1.60 cfs @ 15.43 hrs, Volume= 2.583 af, Atten= 94%, Lag= 192.3 min
Primary = 0.58 cfs @ 15.43 hrs, Volume= 2.213 af
Secondary = 1.02 cfs @ 15.43 hrs, Volume= 0.370 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 718.00' Surf.Area= 9,500 sf Storage= 21,600 cf
Peak Elev= 722.20' @ 15.43 hrs Surf.Area= 29,759 sf Storage= 98,732 cf (77,132 cf above start)
Plug-Flow detention time= 1,681.4 min calculated for 2.087 af (81% of inflow)
Center-of-Mass det. time= 1,309.4 min (2,138.7 - 829.3)

Volume	Invert	Avail.Storage	Storage Description
#1	714.00'	157,600 cf	**Custom Stage Data (Prismatic)** Listed below

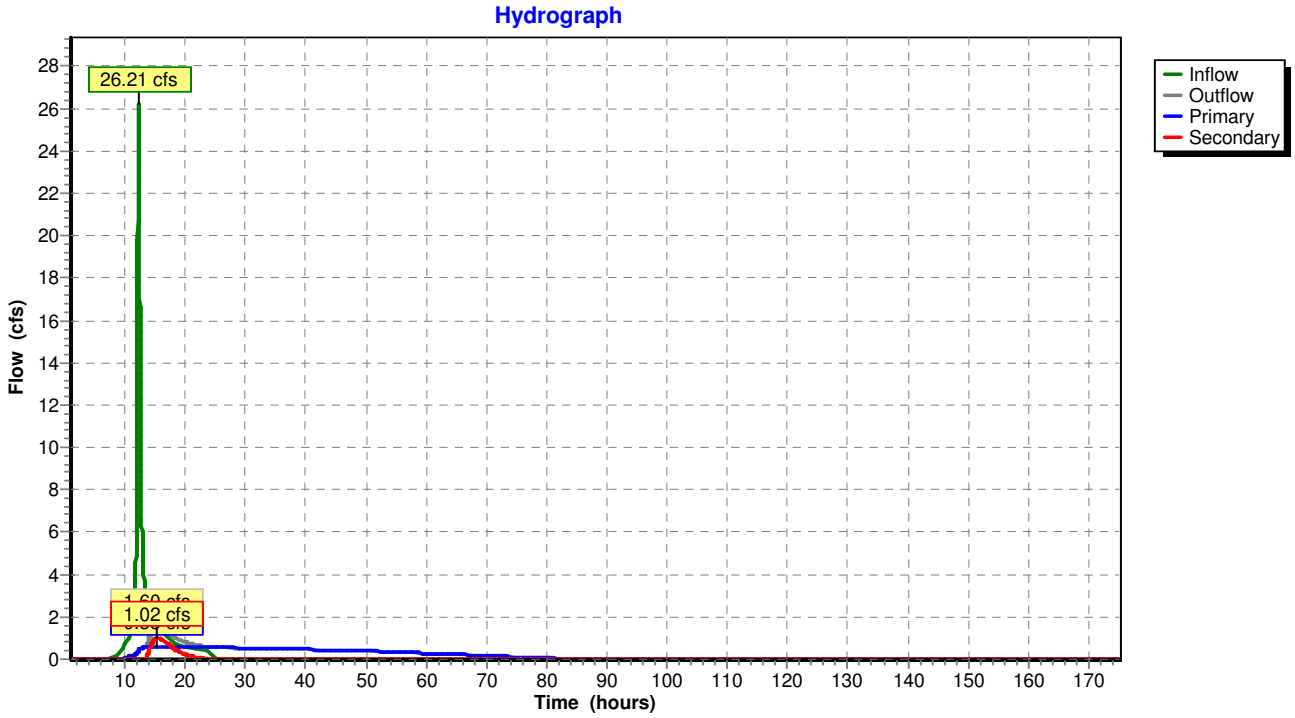
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.00	2,500	0	0
716.00	4,800	7,300	7,300
718.00	9,500	14,300	21,600
720.00	16,000	25,500	47,100
722.00	29,000	45,000	92,100
724.00	36,500	65,500	157,600

Device	Routing	Invert	Outlet Devices
#1	Primary	718.00'	**3.3" Vert. Orifice/Grate** C= 0.600
#2	Secondary	722.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.58 cfs @ 15.43 hrs HW=722.20' TW=673.75' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.58 cfs @ 9.7 fps)

Secondary OutFlow Max=1.02 cfs @ 15.43 hrs HW=722.20' TW=673.75' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.02 cfs @ 1.3 fps)

Pond 3.1P:


Hydrograph
26.21 cfs
1.02 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.2P:

Inflow Area = 35.400 ac, Inflow Depth = 2.98" for 10-year event
Inflow = 57.18 cfs @ 12.30 hrs, Volume= 8.802 af
Outflow = 52.59 cfs @ 12.40 hrs, Volume= 8.657 af, Atten= 8%, Lag= 6.0 min
Primary = 0.16 cfs @ 12.40 hrs, Volume= 1.552 af
Secondary = 52.43 cfs @ 12.40 hrs, Volume= 7.105 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 671.00' Surf.Area= 11,400 sf Storage= 24,850 cf
Peak Elev= 674.49' @ 12.40 hrs Surf.Area= 23,845 sf Storage= 86,158 cf (61,308 cf above start)
Plug-Flow detention time= 900.2 min calculated for 8.086 af (92% of inflow)
Center-of-Mass det. time= 606.2 min (1,822.9 - 1,216.8)

Volume	Invert	Avail.Storage	Storage Description
#1	666.00'	124,850 cf	**Custom Stage Data (Prismatic)** Listed below

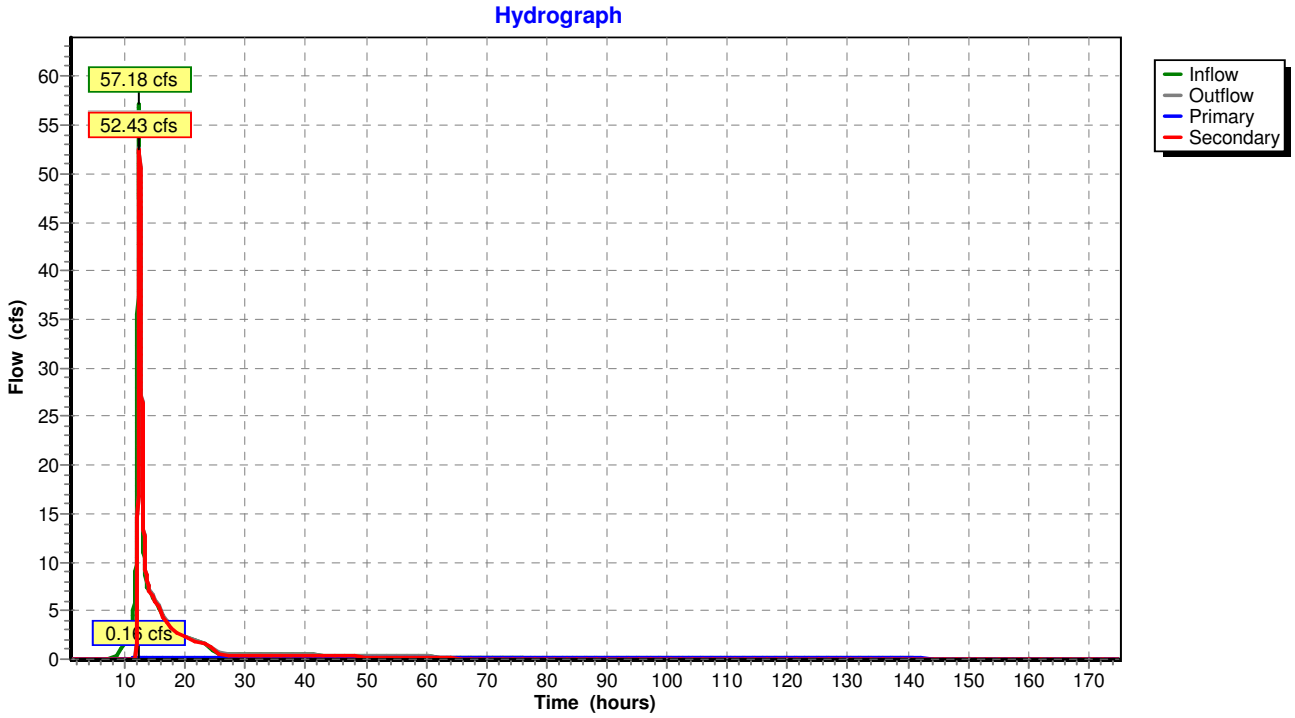
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
666.00	450	0	0
668.00	2,700	3,150	3,150
670.00	7,600	10,300	13,450
672.00	15,200	22,800	36,250
674.00	22,100	37,300	73,550
676.00	29,200	51,300	124,850

Device	Routing	Invert	Outlet Devices
#1	Primary	671.00'	**1.8" Vert. Orifice/Grate** C= 0.600
#2	Secondary	673.50'	**16.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.16 cfs @ 12.40 hrs HW=674.49' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.16 cfs @ 8.9 fps)

Secondary OutFlow Max=52.43 cfs @ 12.40 hrs HW=674.49' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 52.43 cfs @ 3.3 fps)

Pond 3.2P:


Hydrograph
57.18 cfs
52.43 cfs
0.16 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.4P:

Inflow Area = 4.000 ac, Inflow Depth = 2.54" for 10-year event
Inflow = 7.39 cfs @ 12.34 hrs, Volume= 0.845 af
Outflow = 2.90 cfs @ 12.81 hrs, Volume= 0.844 af, Atten= 61%, Lag= 28.4 min
Primary = 0.18 cfs @ 12.81 hrs, Volume= 0.444 af
Secondary = 2.73 cfs @ 12.81 hrs, Volume= 0.400 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 754.00' Surf.Area= 4,300 sf Storage= 8,000 cf
Peak Elev= 756.45' @ 12.81 hrs Surf.Area= 8,182 sf Storage= 23,892 cf (15,892 cf above start)
Plug-Flow detention time= 797.1 min calculated for 0.660 af (78% of inflow)
Center-of-Mass det. time= 542.9 min (1,392.0 - 849.1)

Volume	Invert	Avail.Storage	Storage Description
#1	750.00'	37,800 cf	**Custom Stage Data (Prismatic)** Listed below

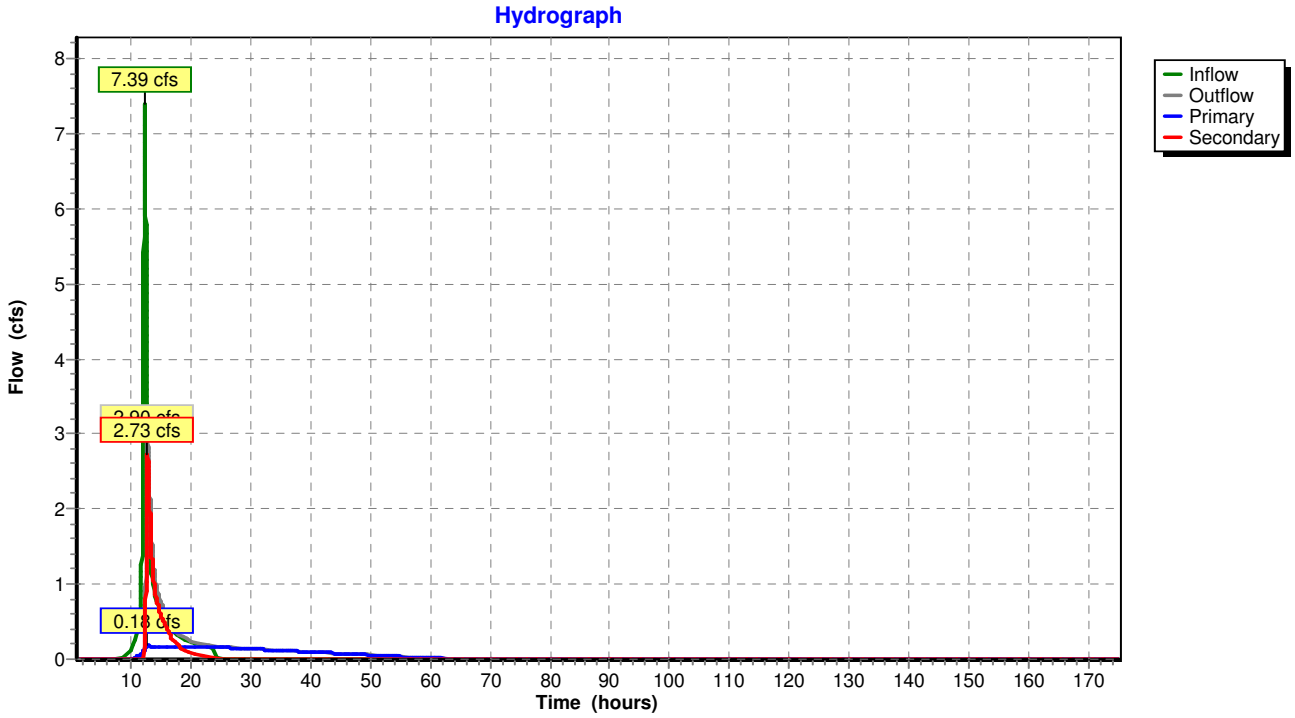
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
750.00	500	0	0
752.00	1,600	2,100	2,100
754.00	4,300	5,900	8,000
756.00	7,500	11,800	19,800
758.00	10,500	18,000	37,800

Device	Routing	Invert	Outlet Devices
#1	Primary	754.00'	**2.1" Vert. Orifice/Grate** C= 0.600
#2	Secondary	756.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.18 cfs @ 12.81 hrs HW=756.45' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 0.18 cfs @ 7.4 fps)

Secondary OutFlow Max=2.73 cfs @ 12.81 hrs HW=756.45' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.73 cfs @ 2.0 fps)

Pond 3.4P:


Hydrograph
7.39 cfs
2.73 cfs
0.18 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Subcatchment 1.1:

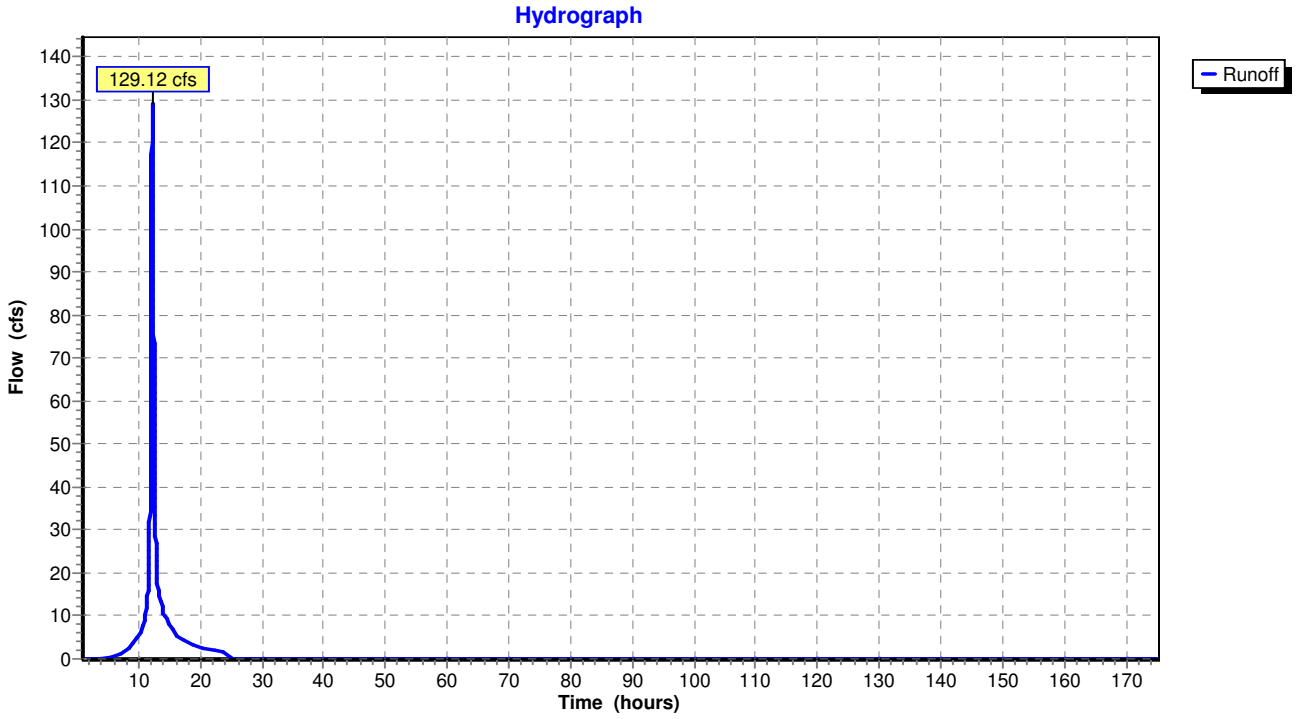
Runoff = 129.12 cfs @ 12.24 hrs, Volume= 13.363 af, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
23.000	94	Suburban Shopping Center
1.300	70	Woods, Good, HSG C
1.500	79	1 acre lots, 20% imp, HSG C
9.700	74	>75% Grass cover, Good, HSG C
35.500	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.6	610	0.1000	2.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	100	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	1,200	0.0330	13.1	41.10	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
18.1	2,010	Total			

Subcatchment 1.1:



Subcatchment 1.2:

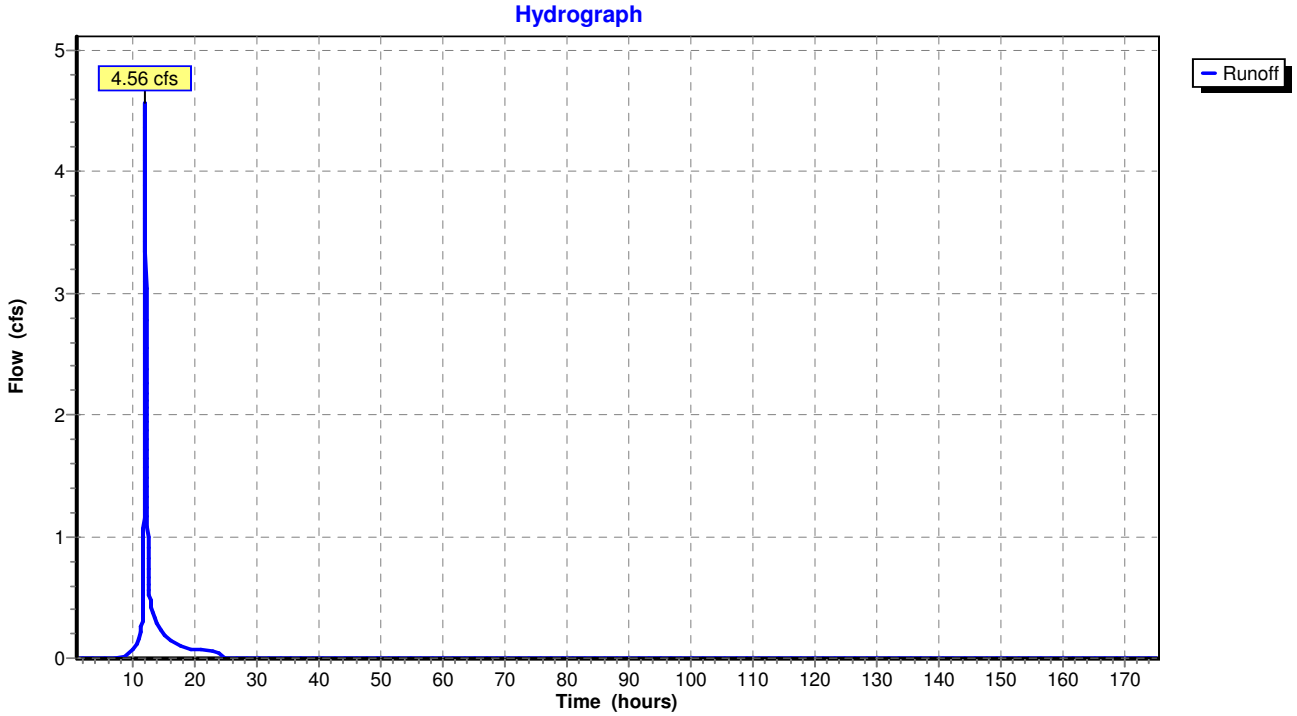
Runoff = 4.56 cfs @ 12.05 hrs, Volume= 0.292 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
1.100	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	60	0.3000	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.2:



Subcatchment 1.3:

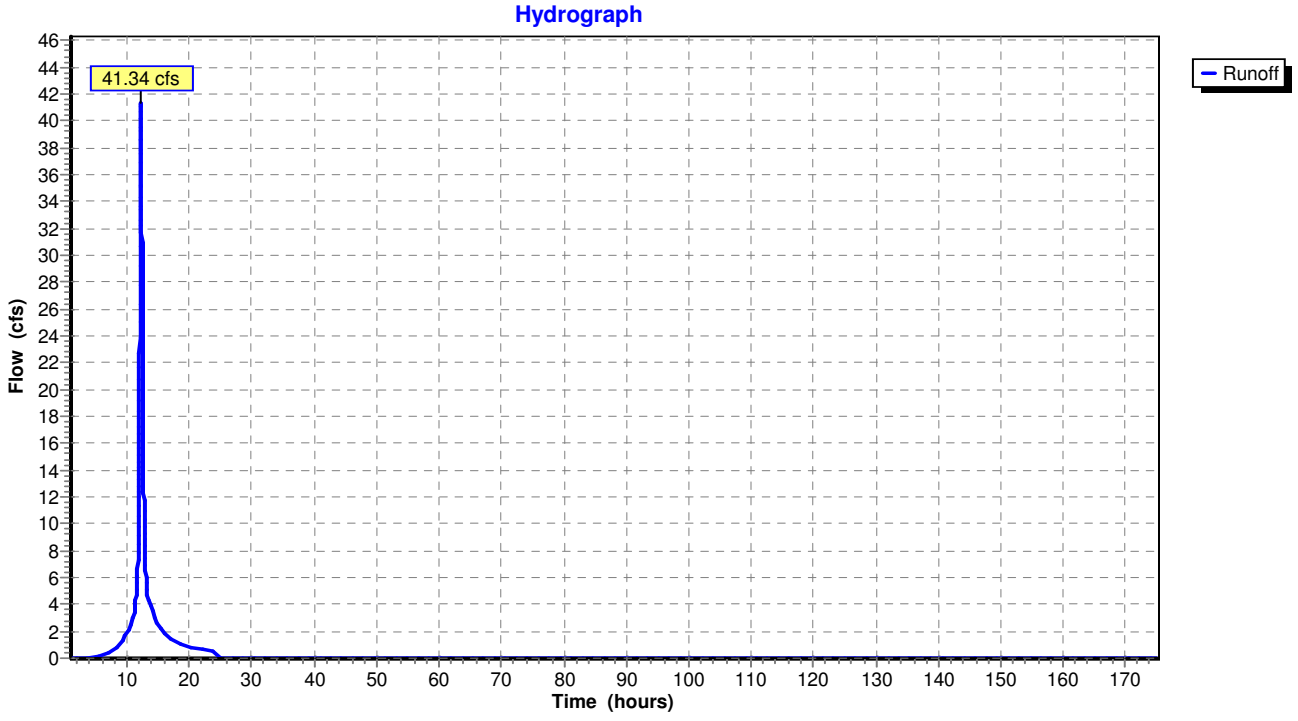
Runoff = 41.34 cfs @ 12.22 hrs, Volume= 4.202 af, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
7.400	94	Suburban Shopping Center
1.700	79	1 acre lots, 20% imp, HSG C
1.800	74	>75% Grass cover, Good, HSG C
10.900	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
7.6	875	0.0750	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	800	0.0250	11.4	35.77	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
17.1	1,775	Total			

Subcatchment 1.3:



Subcatchment 1.4:

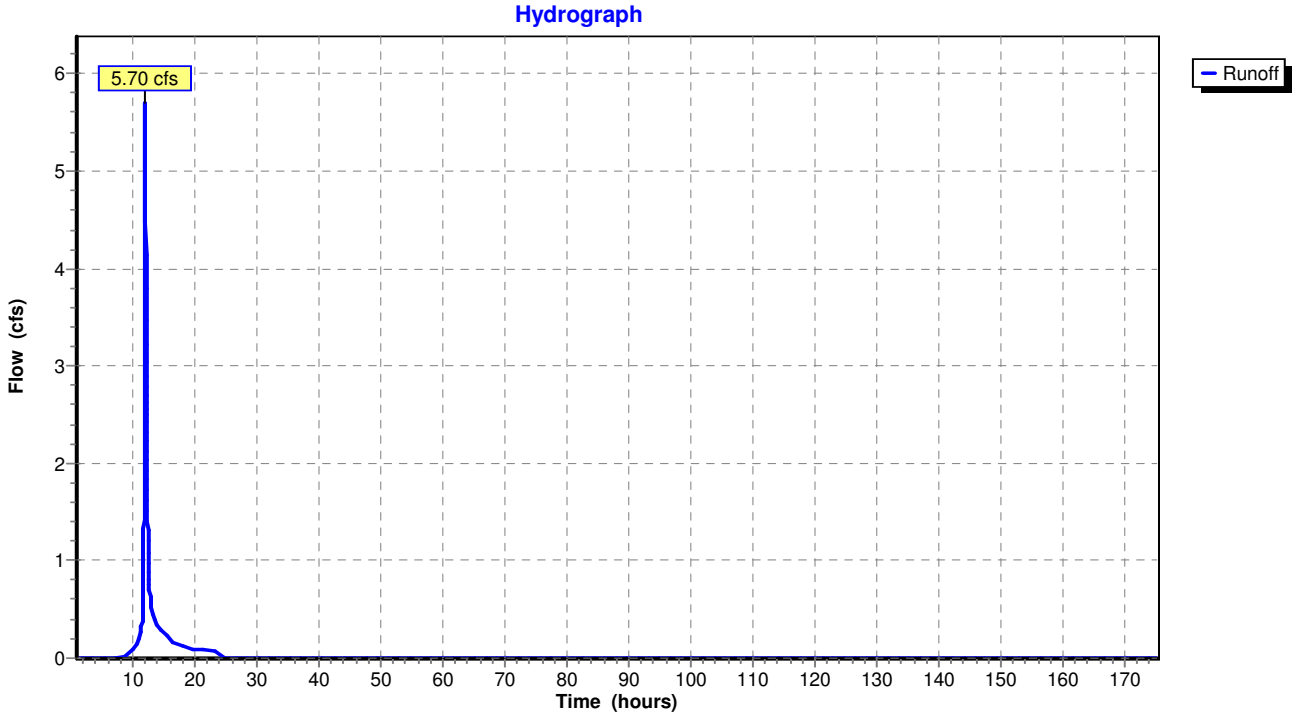
Runoff = 5.70 cfs @ 12.06 hrs, Volume= 0.372 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
1.400	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	70	0.2800	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.4:



Subcatchment 1.5:

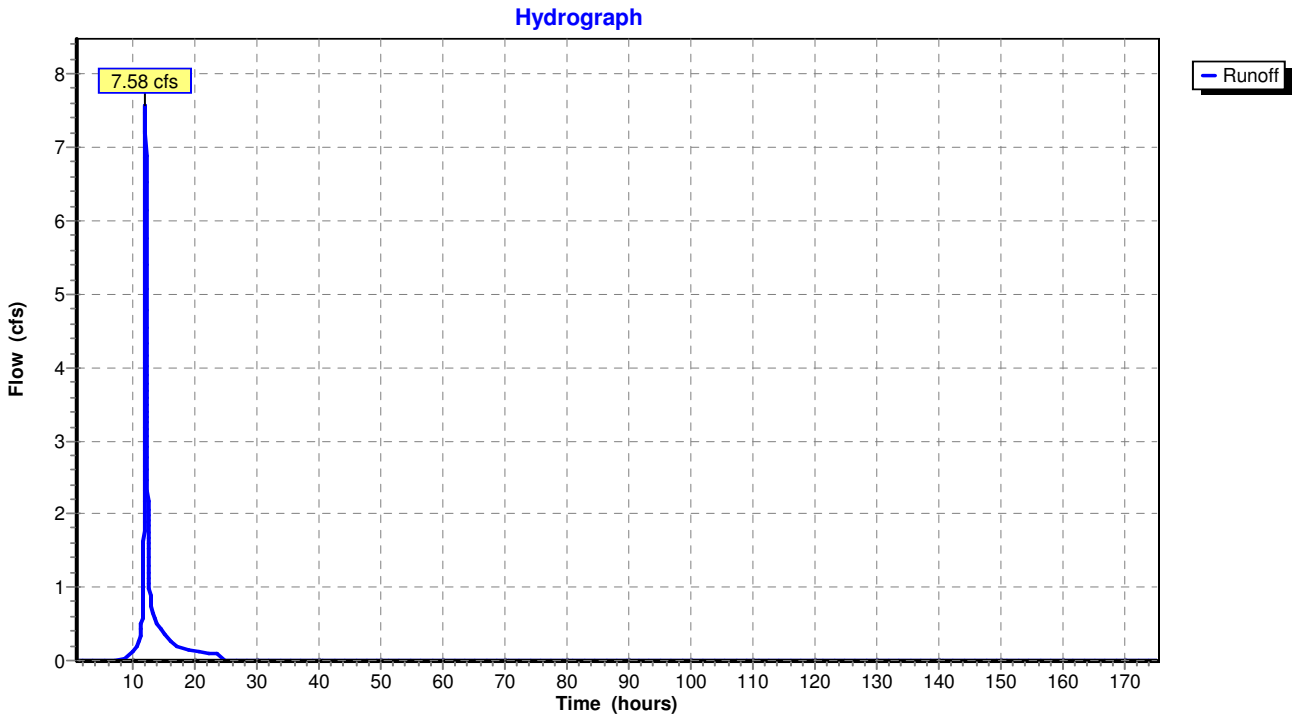
Runoff = 7.58 cfs @ 12.08 hrs, Volume= 0.531 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
2.000	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	53	0.0400	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	850	0.0200	11.0	176.03	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.0 '/' Top.W=12.00' n= 0.022 Earth, clean & straight
5.6	903	Total			

Subcatchment 1.5:



Subcatchment 2.0:

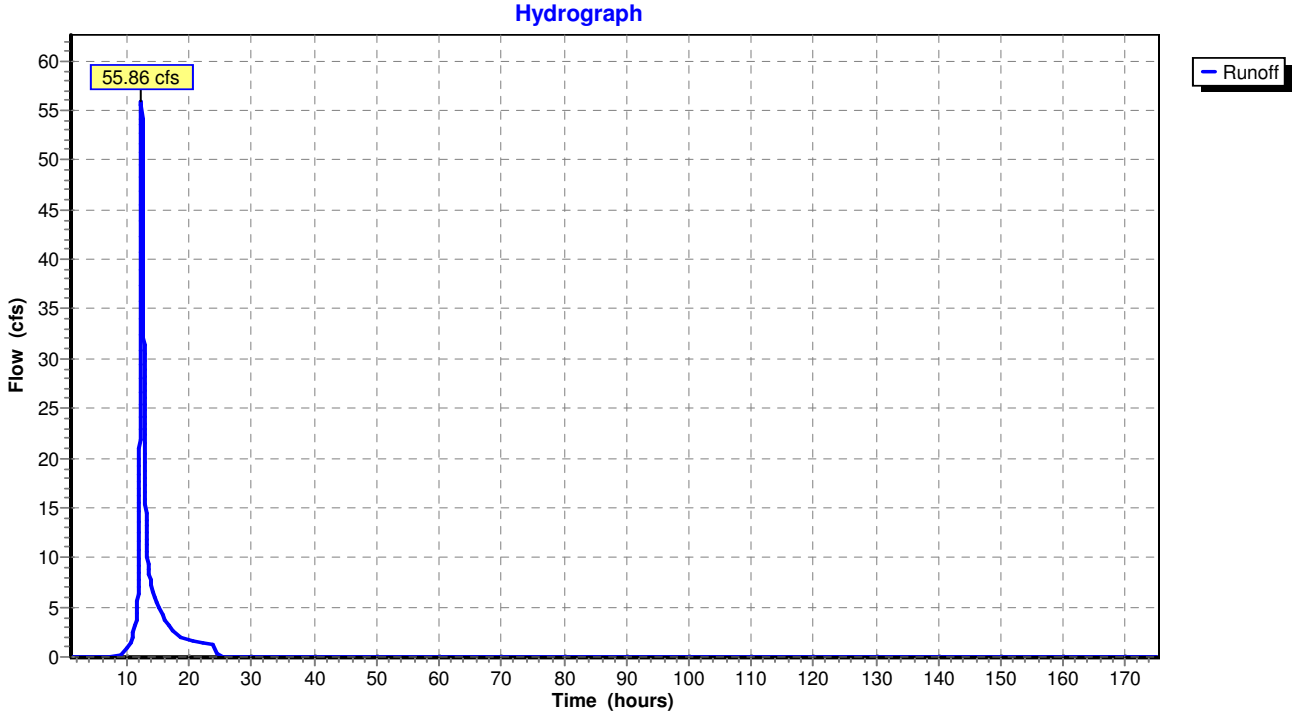
Runoff = 55.86 cfs @ 12.35 hrs, Volume= 6.510 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
16.000	70	Woods, Good, HSG C
10.100	74	>75% Grass cover, Good, HSG C
26.100	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.4	1,500	0.1400	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	170	0.0600	17.6	55.41	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
25.2	1,770	Total			

Subcatchment 2.0:



Subcatchment 3.1:

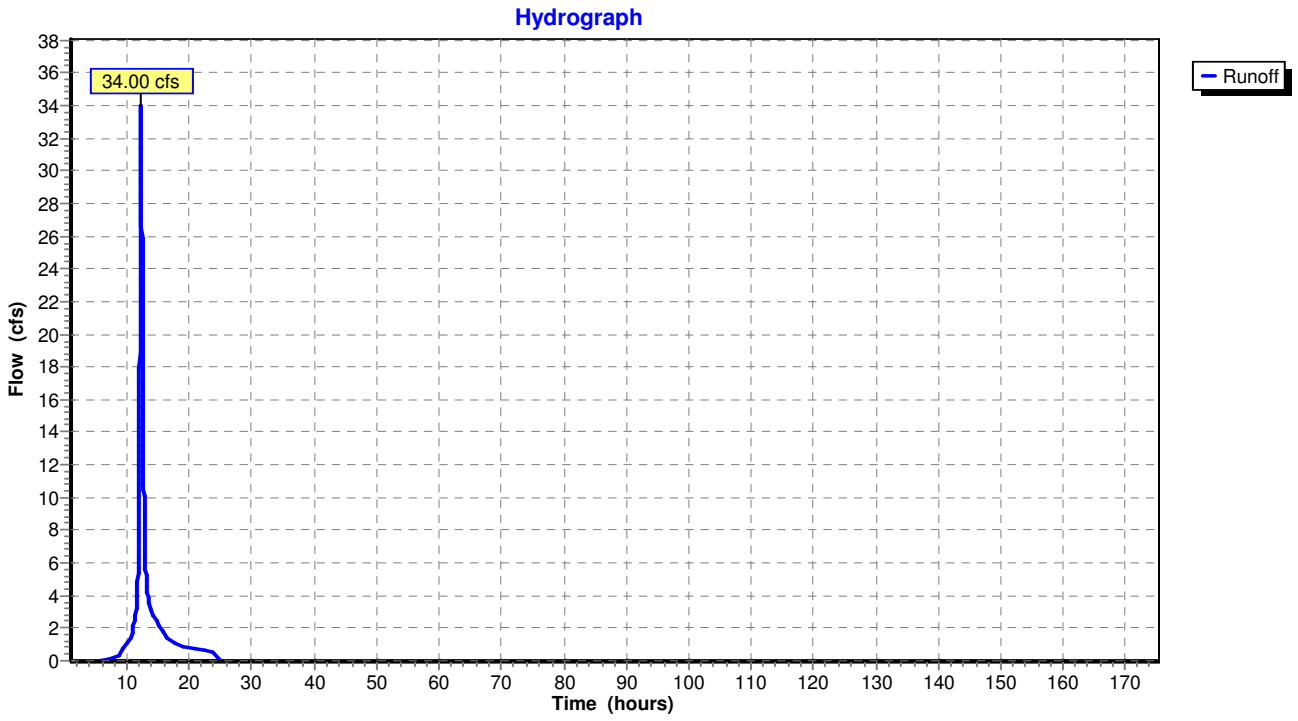
Runoff = 34.00 cfs @ 12.23 hrs, Volume= 3.366 af, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
3.800	94	Suburban Shopping Center
3.500	70	Woods, Good, HSG C
1.800	74	>75% Grass cover, Good, HSG C
1.300	79	1 acre lots, 20% imp, HSG C
10.400	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
8.7	1,100	0.0900	2.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	1,200	Total			

Subcatchment 3.1:



Subcatchment 3.2:

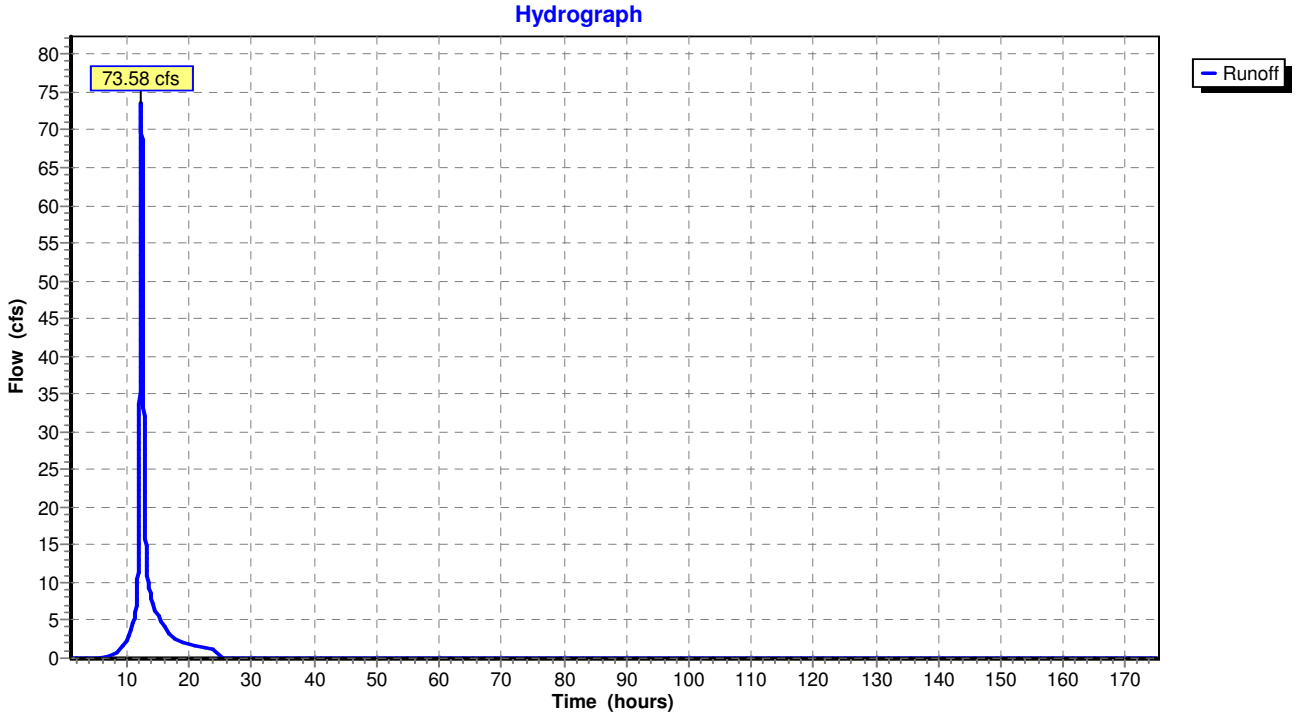
Runoff = 73.58 cfs @ 12.30 hrs, Volume= 8.091 af, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
1.000	70	Woods, Good, HSG C
7.500	98	Paved parking & roofs
16.500	74	>75% Grass cover, Good, HSG C
25.000	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
9.6	700	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	800	0.0500	16.1	50.59	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
22.0	1,600	Total			

Subcatchment 3.2:



Subcatchment 3.3:

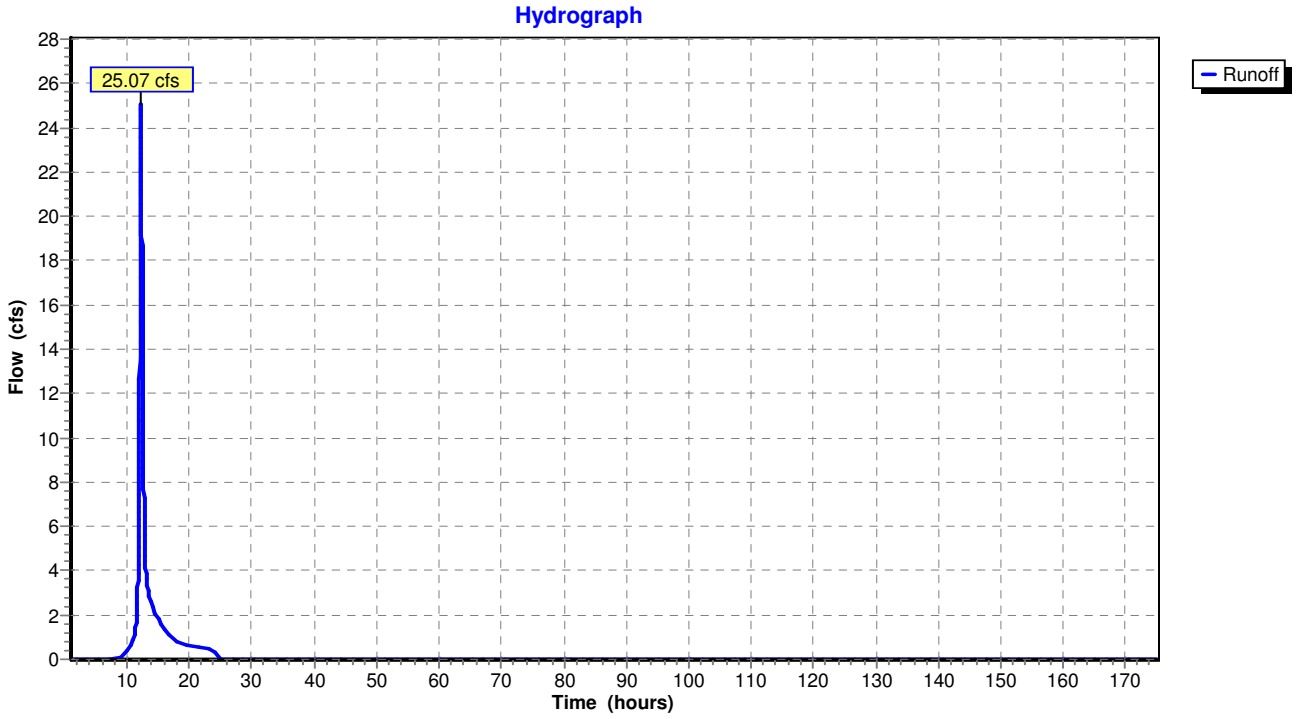
Runoff = 25.07 cfs @ 12.22 hrs, Volume= 2.420 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
0.700	98	Paved parking & roofs
9.000	70	Woods, Good, HSG C
9.700	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1400	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.5	780	0.1600	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.9	880	Total			

Subcatchment 3.3:



Subcatchment 3.4:

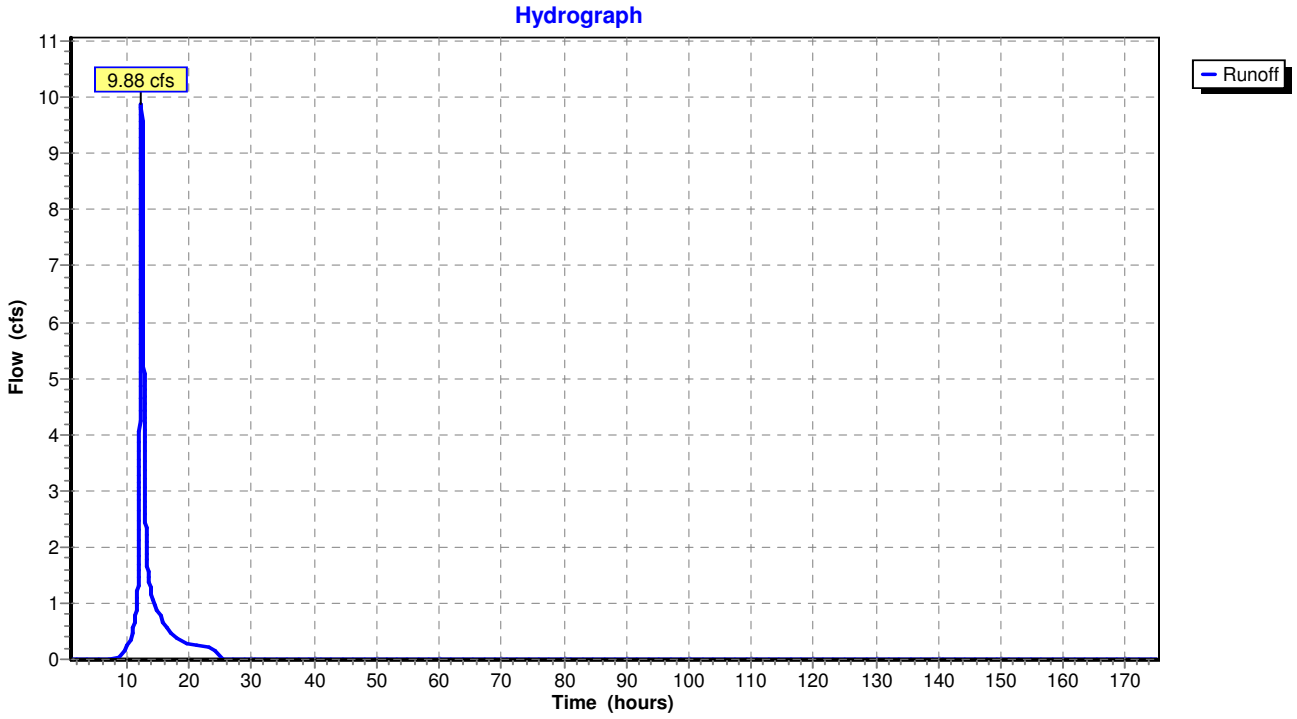
Runoff = 9.88 cfs @ 12.34 hrs, Volume= 1.127 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.00"

Area (ac)	CN	Description
2.800	79	1 acre lots, 20% imp, HSG C
1.200	70	Woods, Good, HSG C
4.000	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.8	1,530	0.0700	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	1,630	Total			

Subcatchment 3.4:



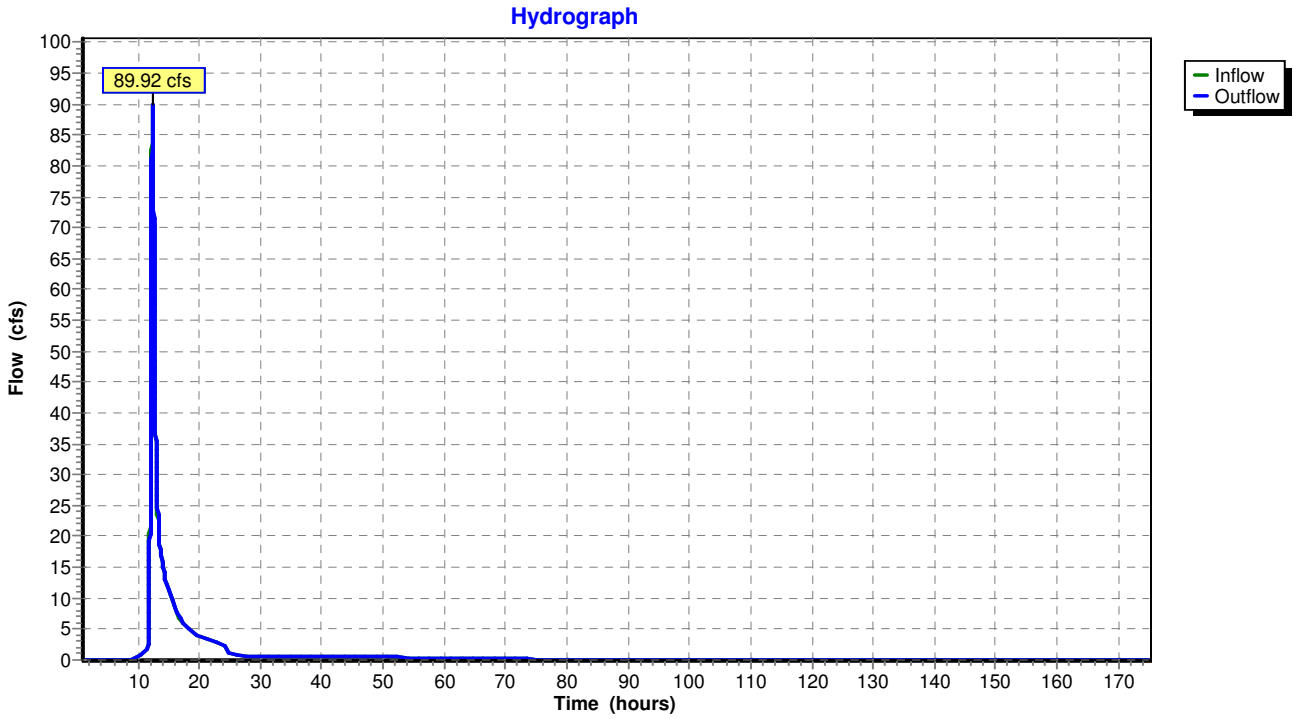
Reach Design Line 3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 49.100 ac, Inflow Depth > 3.63" for 25-year event
Inflow = 89.92 cfs @ 12.37 hrs, Volume= 14.850 af
Outflow = 89.92 cfs @ 12.38 hrs, Volume= 14.850 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Line 3:



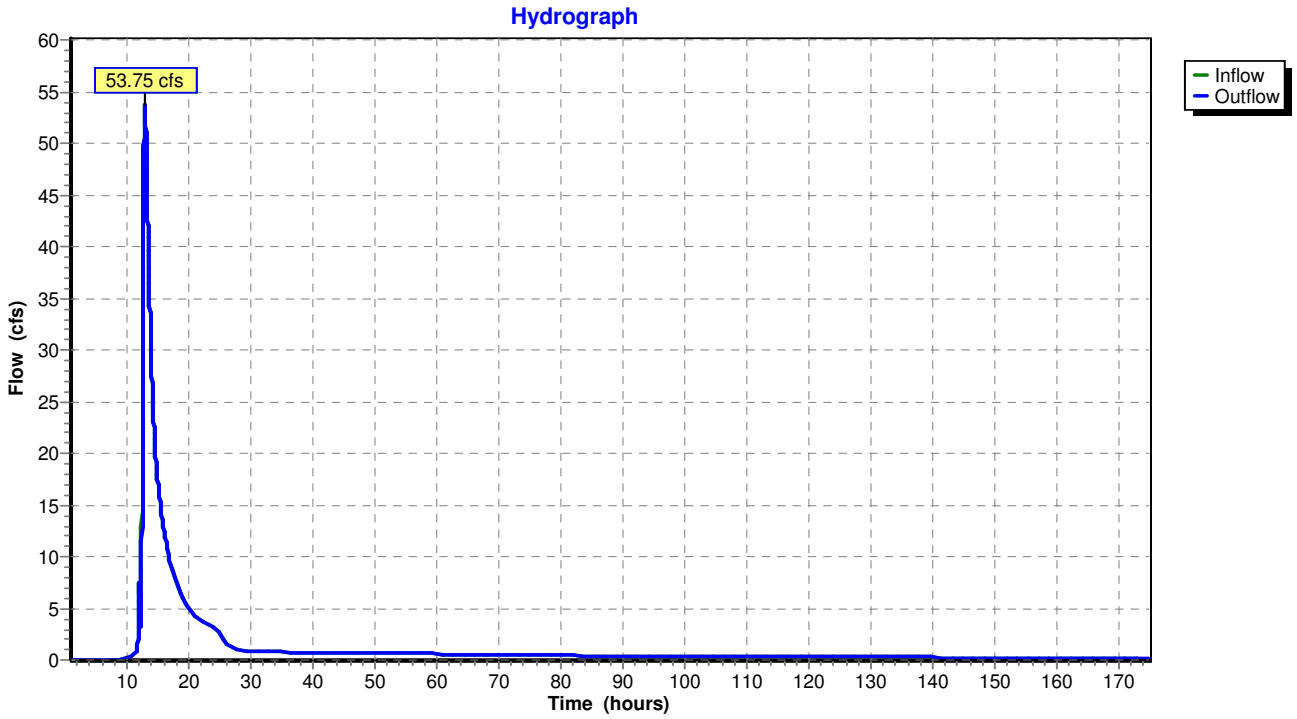
Reach Design Point 1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 50.900 ac, Inflow Depth > 4.26" for 25-year event
Inflow = 53.75 cfs @ 12.94 hrs, Volume= 18.049 af
Outflow = 53.75 cfs @ 12.95 hrs, Volume= 18.049 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 1:



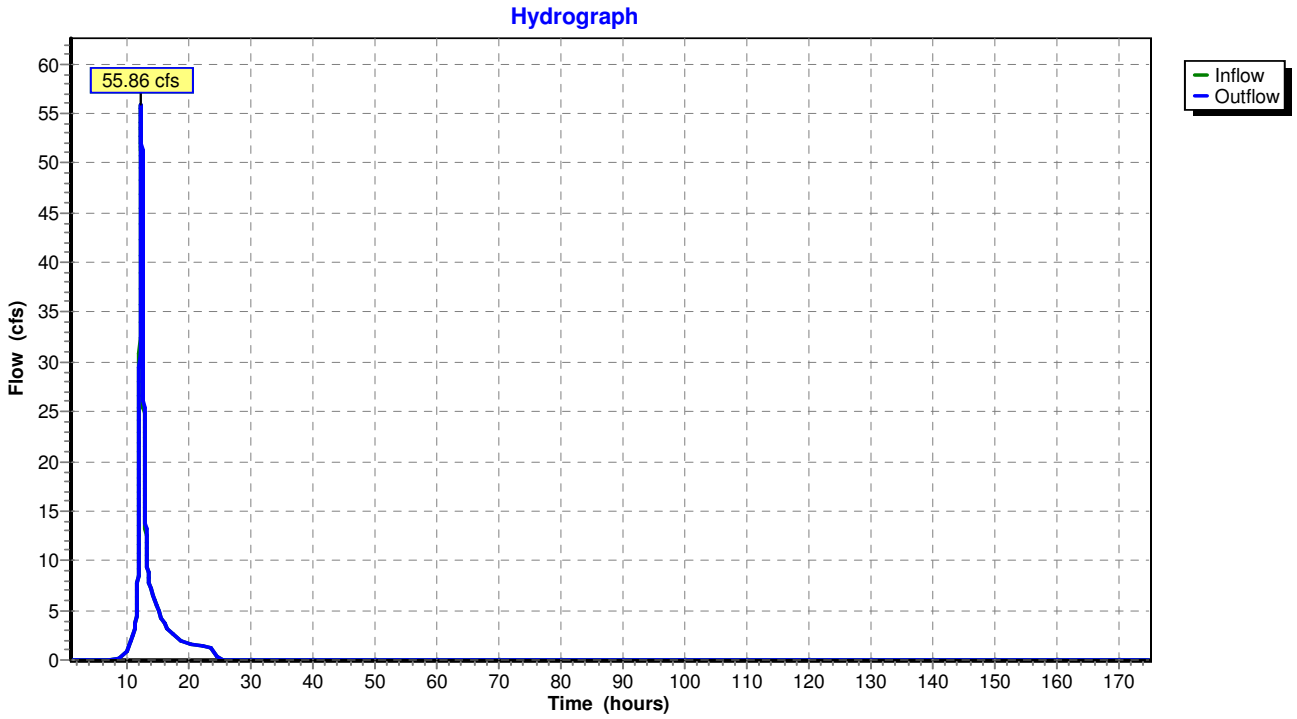
Reach Design Point 2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 26.100 ac, Inflow Depth = 2.99" for 25-year event
Inflow = 55.86 cfs @ 12.35 hrs, Volume= 6.510 af
Outflow = 55.86 cfs @ 12.36 hrs, Volume= 6.510 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 2:



Pond 1.1P:

Inflow Area = 35.500 ac, Inflow Depth = 4.52" for 25-year event
Inflow = 129.12 cfs @ 12.24 hrs, Volume= 13.363 af
Outflow = 118.74 cfs @ 12.32 hrs, Volume= 13.283 af, Atten= 8%, Lag= 4.6 min
Primary = 59.57 cfs @ 12.32 hrs, Volume= 10.837 af
Secondary = 59.16 cfs @ 12.32 hrs, Volume= 2.446 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 780.20' Surf.Area= 33,940 sf Storage= 102,450 cf
Peak Elev= 783.80' @ 12.32 hrs Surf.Area= 55,277 sf Storage= 262,439 cf (159,989 cf above start)
Plug-Flow detention time= 850.5 min calculated for 10.931 af (82% of inflow)
Center-of-Mass det. time= 627.8 min (1,433.7 - 805.9)

Volume	Invert	Avail.Storage	Storage Description
#1	773.00'	348,200 cf	**Custom Stage Data (Prismatic)** Listed below

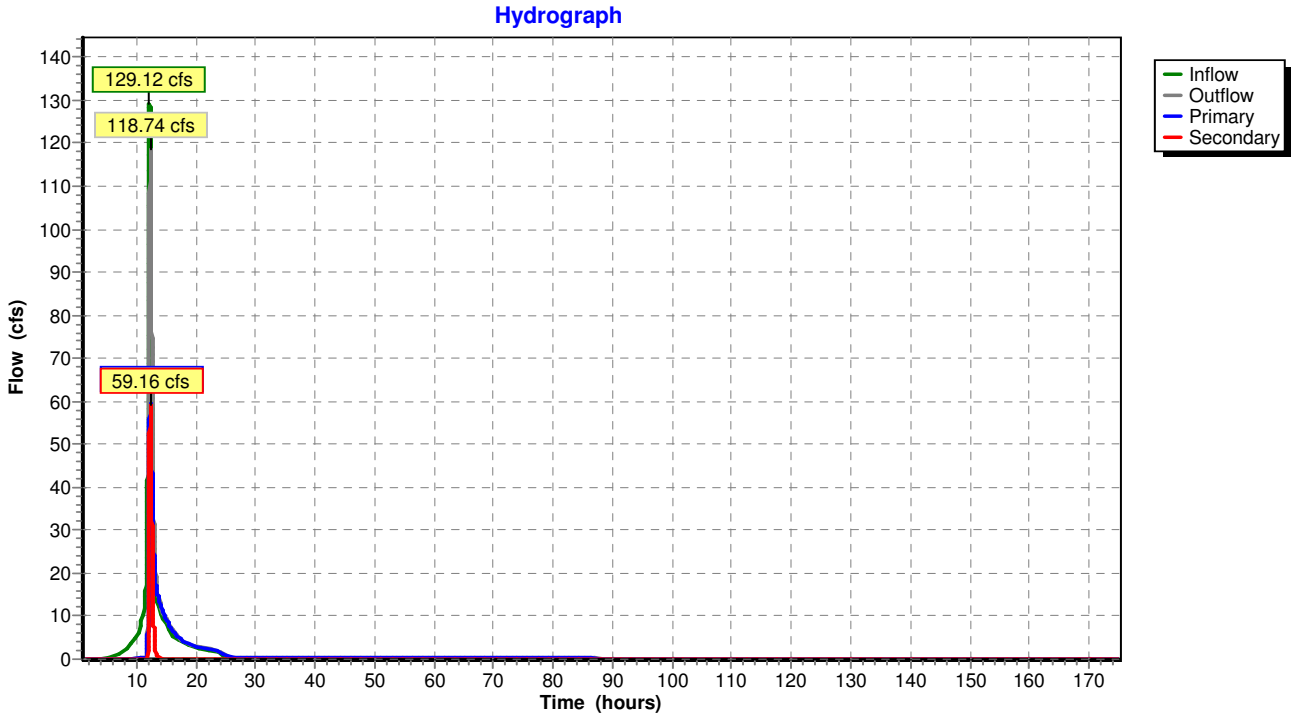
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
773.00	700	0	0
774.00	3,200	1,950	1,950
776.00	10,300	13,500	15,450
778.00	18,100	28,400	43,850
780.00	32,800	50,900	94,750
782.00	44,200	77,000	171,750
784.00	56,500	100,700	272,450
785.00	63,000	59,750	332,200
785.25	65,000	16,000	348,200

Device	Routing	Invert	Outlet Devices
#1	Primary	780.20'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	783.00'	**25.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	782.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=59.57 cfs @ 12.32 hrs HW=783.80' TW=773.84' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.44 cfs @ 9.0 fps)
└—**3=Broad-Crested Rectangular Weir** (Weir Controls 59.13 cfs @ 3.8 fps)

Secondary OutFlow Max=59.16 cfs @ 12.32 hrs HW=783.80' TW=773.84' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 59.16 cfs @ 3.0 fps)

Pond 1.1P:


Hydrograph
129.12 cfs
118.74 cfs
59.16 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.2P:

Inflow Area = 36.600 ac, Inflow Depth > 4.45" for 25-year event
Inflow = 120.28 cfs @ 12.32 hrs, Volume= 13.575 af
Outflow = 100.12 cfs @ 12.46 hrs, Volume= 13.443 af, Atten= 17%, Lag= 8.7 min
Primary = 0.31 cfs @ 12.46 hrs, Volume= 2.235 af
Secondary = 99.81 cfs @ 12.46 hrs, Volume= 11.207 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 770.00' Surf.Area= 12,900 sf Storage= 33,300 cf
Peak Elev= 774.28' @ 12.46 hrs Surf.Area= 23,759 sf Storage= 111,906 cf (78,606 cf above start)
Plug-Flow detention time= 667.3 min calculated for 12.678 af (93% of inflow)
Center-of-Mass det. time= 255.4 min (1,676.0 - 1,420.6)

Volume	Invert	Avail.Storage	Storage Description
#1	766.00'	156,300 cf	**Custom Stage Data (Prismatic)** Listed below

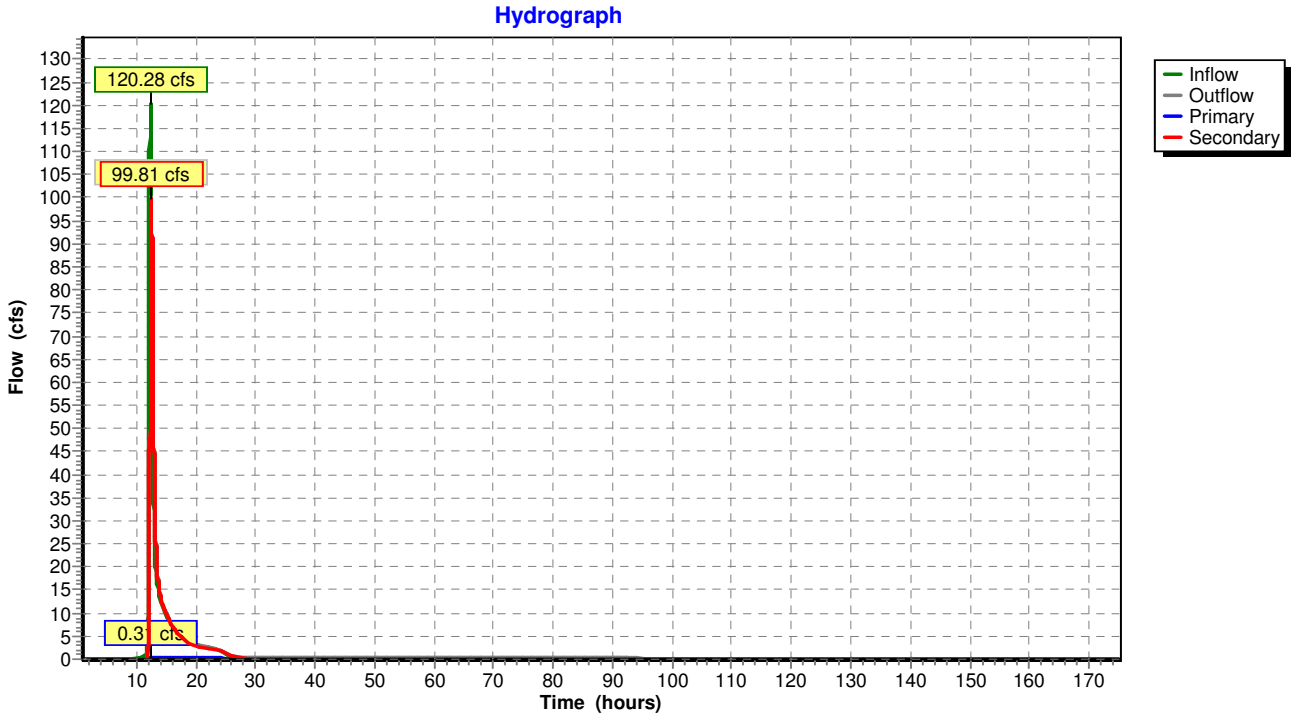
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
766.00	4,000	0	0
768.00	8,200	12,200	12,200
770.00	12,900	21,100	33,300
772.00	17,800	30,700	64,000
774.00	23,000	40,800	104,800
776.00	28,500	51,500	156,300

Device	Routing	Invert	Outlet Devices
#1	Primary	770.00'	**2.4" Vert. Orifice/Grate** C= 0.600
#2	Secondary	771.50'	**6.5' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.31 cfs @ 12.46 hrs HW=774.28' TW=760.66' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.31 cfs @ 9.8 fps)

Secondary OutFlow Max=99.79 cfs @ 12.46 hrs HW=774.28' TW=760.66' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 99.79 cfs @ 5.5 fps)

Pond 1.2P:


Hydrograph
120.28 cfs
99.81 cfs
0.31 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.3P:

Inflow Area = 10.900 ac, Inflow Depth = 4.63" for 25-year event
Inflow = 41.34 cfs @ 12.22 hrs, Volume= 4.202 af
Outflow = 7.91 cfs @ 12.86 hrs, Volume= 4.197 af, Atten= 81%, Lag= 38.3 min
Primary = 0.52 cfs @ 12.86 hrs, Volume= 2.402 af
Secondary = 7.39 cfs @ 12.86 hrs, Volume= 1.795 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 763.50' Surf.Area= 12,775 sf Storage= 36,875 cf
Peak Elev= 768.38' @ 12.86 hrs Surf.Area= 30,459 sf Storage= 140,545 cf (103,670 cf above start)
Plug-Flow detention time= 1,536.2 min calculated for 3.351 af (80% of inflow)
Center-of-Mass det. time= 1,159.3 min (1,961.1 - 801.8)

Volume	Invert	Avail.Storage	Storage Description
#1	758.00'	194,200 cf	**Custom Stage Data (Prismatic)** Listed below

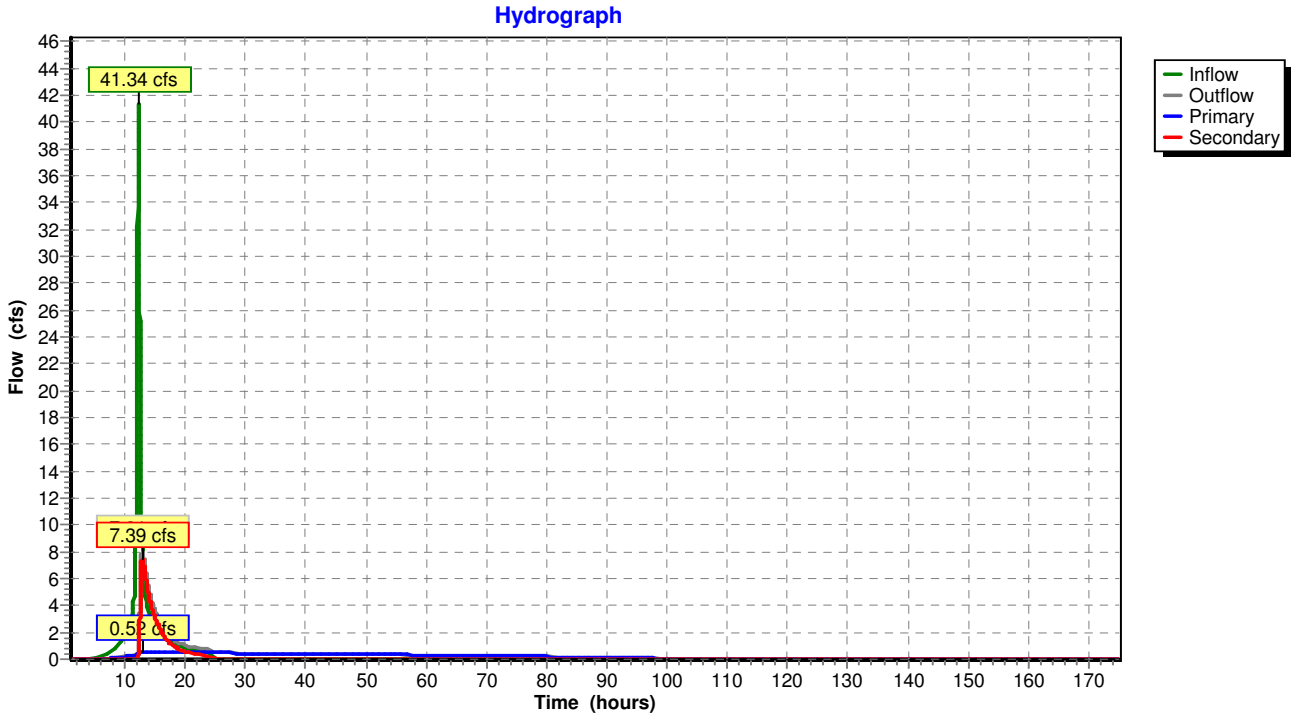
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
758.00	2,900	0	0
760.00	4,900	7,800	7,800
762.00	7,600	12,500	20,300
764.00	14,500	22,100	42,400
766.00	21,100	35,600	78,000
768.00	28,800	49,900	127,900
770.00	37,500	66,300	194,200

Device	Routing	Invert	Outlet Devices
#1	Primary	763.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	767.50'	**2.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.52 cfs @ 12.86 hrs HW=768.38' TW=763.18' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 0.52 cfs @ 10.5 fps)

Secondary OutFlow Max=7.39 cfs @ 12.86 hrs HW=768.38' TW=763.18' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 7.39 cfs @ 3.1 fps)

Pond 1.3P:


Hydrograph
41.34 cfs
7.39 cfs
0.52 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.4P:

Inflow Area = 48.900 ac, Inflow Depth > 4.42" for 25-year event
Inflow = 105.15 cfs @ 12.48 hrs, Volume= 18.012 af
Outflow = 52.95 cfs @ 12.94 hrs, Volume= 17.518 af, Atten= 50%, Lag= 27.9 min
Primary = 0.44 cfs @ 12.94 hrs, Volume= 3.797 af
Secondary = 52.51 cfs @ 12.94 hrs, Volume= 13.720 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 756.00' Surf.Area= 9,900 sf Storage= 20,400 cf
Peak Elev= 763.22' @ 12.94 hrs Surf.Area= 32,553 sf Storage= 176,254 cf (155,854 cf above start)
Plug-Flow detention time= 745.9 min calculated for 17.049 af (95% of inflow)
Center-of-Mass det. time= 363.6 min (2,088.5 - 1,724.9)

Volume	Invert	Avail.Storage	Storage Description
#1	752.00'	276,000 cf	**Custom Stage Data (Prismatic)** Listed below

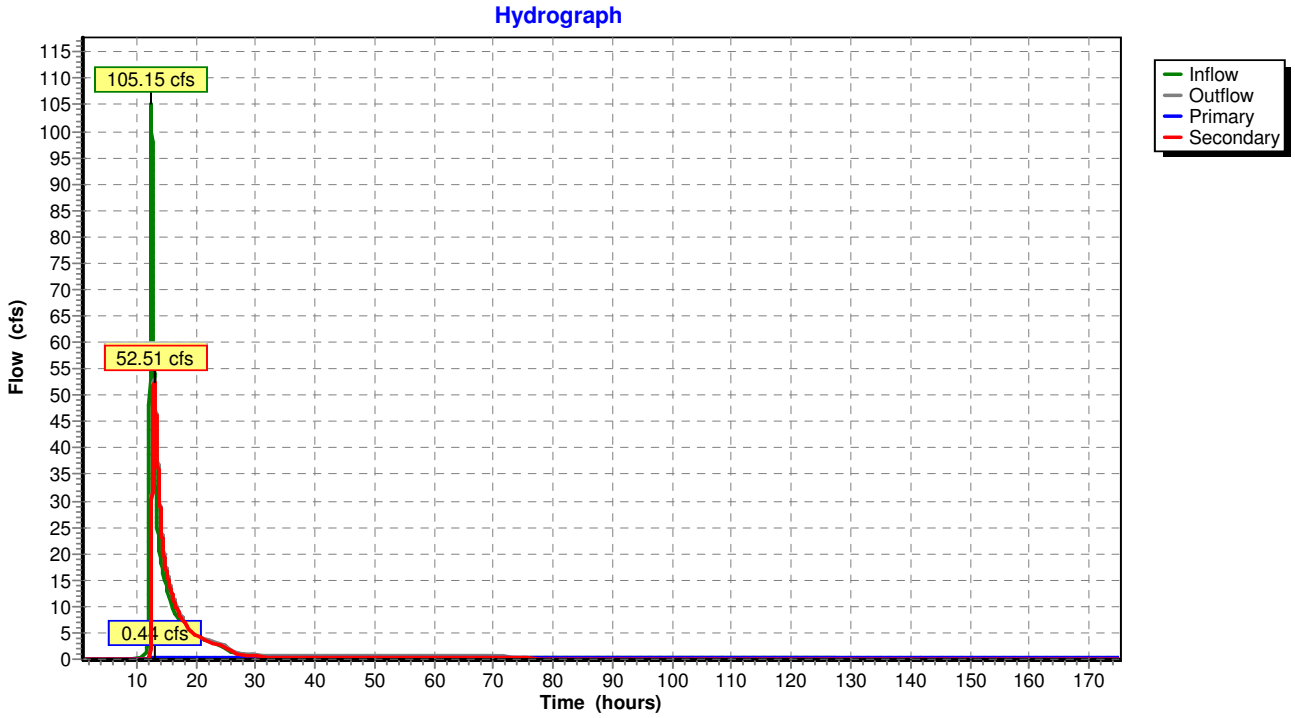
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
752.00	900	0	0
754.00	4,800	5,700	5,700
756.00	9,900	14,700	20,400
758.00	16,300	26,200	46,600
760.00	22,600	38,900	85,500
762.00	29,200	51,800	137,300
764.00	34,700	63,900	201,200
766.00	40,100	74,800	276,000

Device	Routing	Invert	Outlet Devices
#1	Secondary	759.25'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	756.00'	**2.5" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.44 cfs @ 12.94 hrs HW=763.22' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 0.44 cfs @ 12.8 fps)

Secondary OutFlow Max=52.51 cfs @ 12.94 hrs HW=763.22' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 52.51 cfs @ 6.6 fps)

Pond 1.4P:


Hydrograph
105.15 cfs
52.51 cfs
0.44 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.1P:

Inflow Area = 10.400 ac, Inflow Depth = 3.88" for 25-year event
Inflow = 34.00 cfs @ 12.23 hrs, Volume= 3.366 af
Outflow = 4.09 cfs @ 13.29 hrs, Volume= 3.362 af, Atten= 88%, Lag= 64.0 min
Primary = 0.59 cfs @ 13.29 hrs, Volume= 2.263 af
Secondary = 3.50 cfs @ 13.29 hrs, Volume= 1.099 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 718.00' Surf.Area= 9,500 sf Storage= 21,600 cf
Peak Elev= 722.44' @ 13.29 hrs Surf.Area= 30,665 sf Storage= 106,642 cf (85,042 cf above start)
Plug-Flow detention time= 1,296.2 min calculated for 2.865 af (85% of inflow)
Center-of-Mass det. time= 1,045.3 min (1,867.1 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	714.00'	157,600 cf	**Custom Stage Data (Prismatic)** Listed below

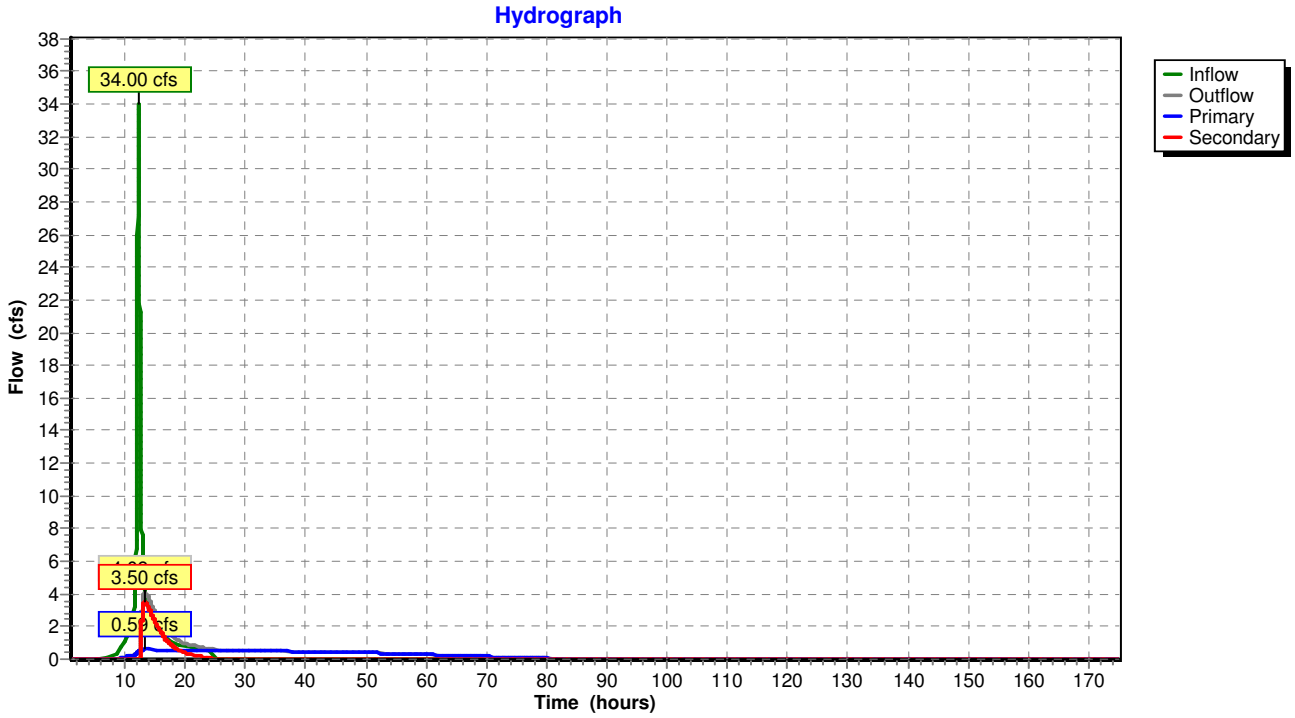
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.00	2,500	0	0
716.00	4,800	7,300	7,300
718.00	9,500	14,300	21,600
720.00	16,000	25,500	47,100
722.00	29,000	45,000	92,100
724.00	36,500	65,500	157,600

Device	Routing	Invert	Outlet Devices
#1	Primary	718.00'	**3.3" Vert. Orifice/Grate** C= 0.600
#2	Secondary	722.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.59 cfs @ 13.29 hrs HW=722.44' TW=673.99' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.59 cfs @ 10.0 fps)

Secondary OutFlow Max=3.50 cfs @ 13.29 hrs HW=722.44' TW=673.99' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 3.50 cfs @ 2.0 fps)

Pond 3.1P:


Hydrograph
34.00 cfs
3.50 cfs
0.59 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.2P:

Inflow Area = 35.400 ac, Inflow Depth = 3.88" for 25-year event
Inflow = 74.08 cfs @ 12.30 hrs, Volume= 11.453 af
Outflow = 69.28 cfs @ 12.38 hrs, Volume= 11.305 af, Atten= 6%, Lag= 5.2 min
Primary = 0.16 cfs @ 12.38 hrs, Volume= 1.564 af
Secondary = 69.11 cfs @ 12.38 hrs, Volume= 9.741 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 671.00' Surf.Area= 11,400 sf Storage= 24,850 cf
Peak Elev= 674.69' @ 12.38 hrs Surf.Area= 24,556 sf Storage= 91,295 cf (66,445 cf above start)
Plug-Flow detention time= 685.9 min calculated for 10.734 af (94% of inflow)
Center-of-Mass det. time= 467.7 min (1,599.6 - 1,131.8)

Volume	Invert	Avail.Storage	Storage Description
#1	666.00'	124,850 cf	**Custom Stage Data (Prismatic)** Listed below

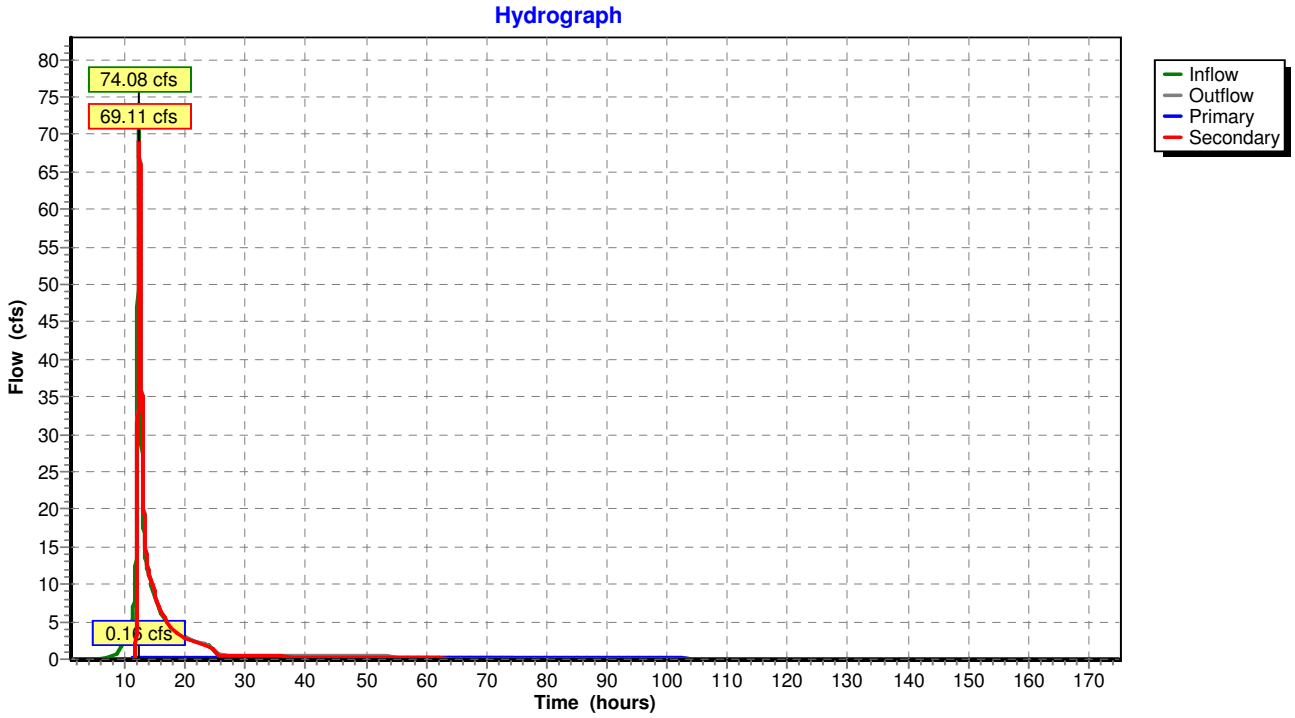
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
666.00	450	0	0
668.00	2,700	3,150	3,150
670.00	7,600	10,300	13,450
672.00	15,200	22,800	36,250
674.00	22,100	37,300	73,550
676.00	29,200	51,300	124,850

Device	Routing	Invert	Outlet Devices
#1	Primary	671.00'	**1.8" Vert. Orifice/Grate** C= 0.600
#2	Secondary	673.50'	**16.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.16 cfs @ 12.38 hrs HW=674.69' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.16 cfs @ 9.2 fps)

Secondary OutFlow Max=69.10 cfs @ 12.38 hrs HW=674.69' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 69.10 cfs @ 3.6 fps)

Pond 3.2P:


Hydrograph
74.08 cfs
69.11 cfs
0.16 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.4P:

Inflow Area = 4.000 ac, Inflow Depth = 3.38" for 25-year event
Inflow = 9.88 cfs @ 12.34 hrs, Volume= 1.127 af
Outflow = 5.91 cfs @ 12.65 hrs, Volume= 1.126 af, Atten= 40%, Lag= 18.5 min
Primary = 0.19 cfs @ 12.65 hrs, Volume= 0.454 af
Secondary = 5.72 cfs @ 12.65 hrs, Volume= 0.672 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 754.00' Surf.Area= 4,300 sf Storage= 8,000 cf
Peak Elev= 756.71' @ 12.65 hrs Surf.Area= 8,562 sf Storage= 26,174 cf (18,174 cf above start)
Plug-Flow detention time= 588.5 min calculated for 0.942 af (84% of inflow)
Center-of-Mass det. time= 420.6 min (1,261.5 - 840.8)

Volume	Invert	Avail.Storage	Storage Description
#1	750.00'	37,800 cf	**Custom Stage Data (Prismatic)** Listed below

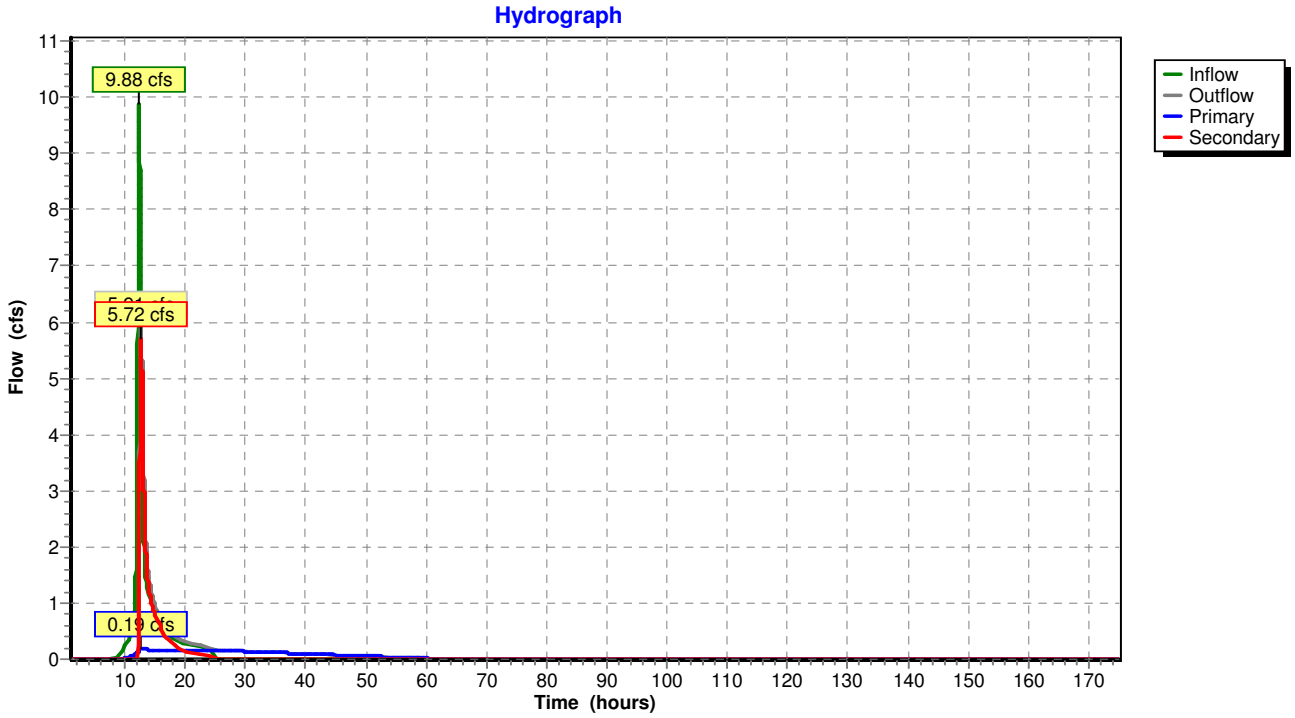
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
750.00	500	0	0
752.00	1,600	2,100	2,100
754.00	4,300	5,900	8,000
756.00	7,500	11,800	19,800
758.00	10,500	18,000	37,800

Device	Routing	Invert	Outlet Devices
#1	Primary	754.00'	**2.1" Vert. Orifice/Grate** C= 0.600
#2	Secondary	756.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.19 cfs @ 12.65 hrs HW=756.71' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 0.19 cfs @ 7.8 fps)

Secondary OutFlow Max=5.72 cfs @ 12.65 hrs HW=756.71' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 5.72 cfs @ 2.7 fps)

Pond 3.4P:


Hydrograph
9.88 cfs
5.72 cfs
0.19 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Subcatchment 1.1:

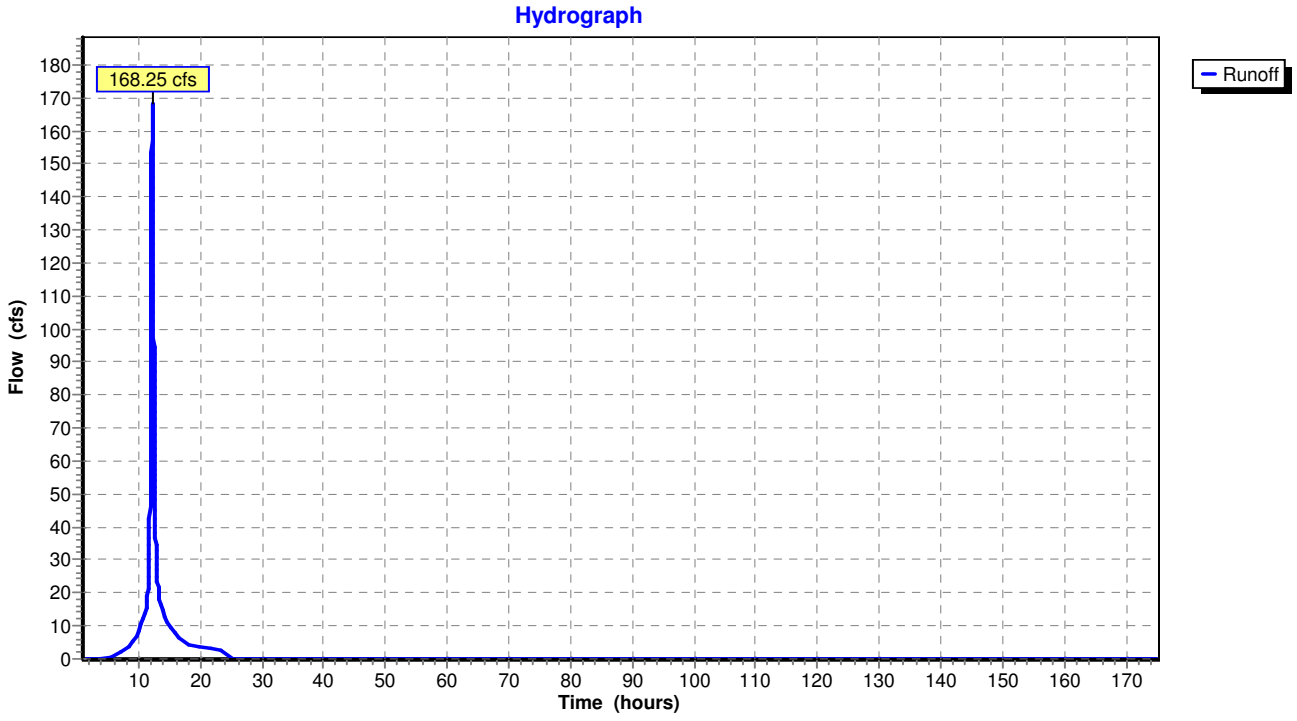
Runoff = 168.25 cfs @ 12.24 hrs, Volume= 17.643 af, Depth= 5.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
23.000	94	Suburban Shopping Center
1.300	70	Woods, Good, HSG C
1.500	79	1 acre lots, 20% imp, HSG C
9.700	74	>75% Grass cover, Good, HSG C
35.500	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.6	610	0.1000	2.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	100	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	1,200	0.0330	13.1	41.10	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
18.1	2,010	Total			

Subcatchment 1.1:



Subcatchment 1.2:

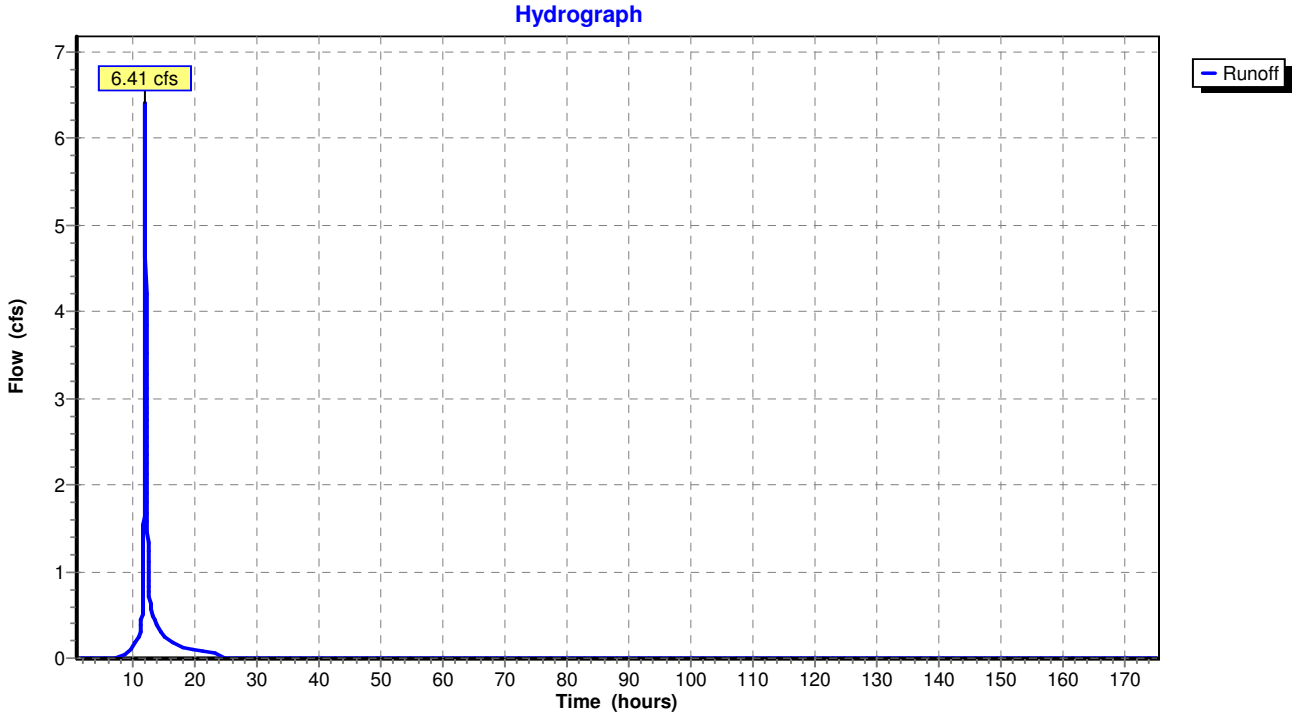
Runoff = 6.41 cfs @ 12.05 hrs, Volume= 0.411 af, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
1.100	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	60	0.3000	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.2:



Subcatchment 1.3:

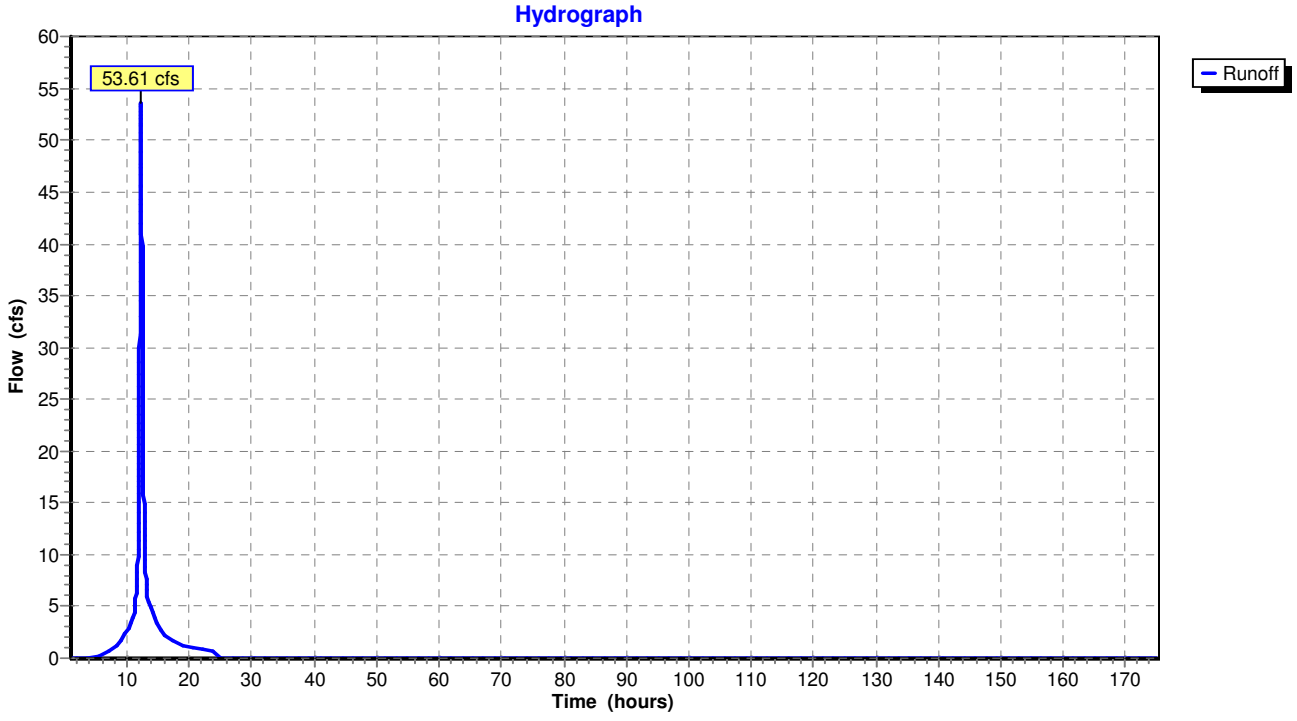
Runoff = 53.61 cfs @ 12.22 hrs, Volume= 5.523 af, Depth= 6.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
7.400	94	Suburban Shopping Center
1.700	79	1 acre lots, 20% imp, HSG C
1.800	74	>75% Grass cover, Good, HSG C
10.900	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
7.6	875	0.0750	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	800	0.0250	11.4	35.77	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
17.1	1,775	Total			

Subcatchment 1.3:



Subcatchment 1.4:

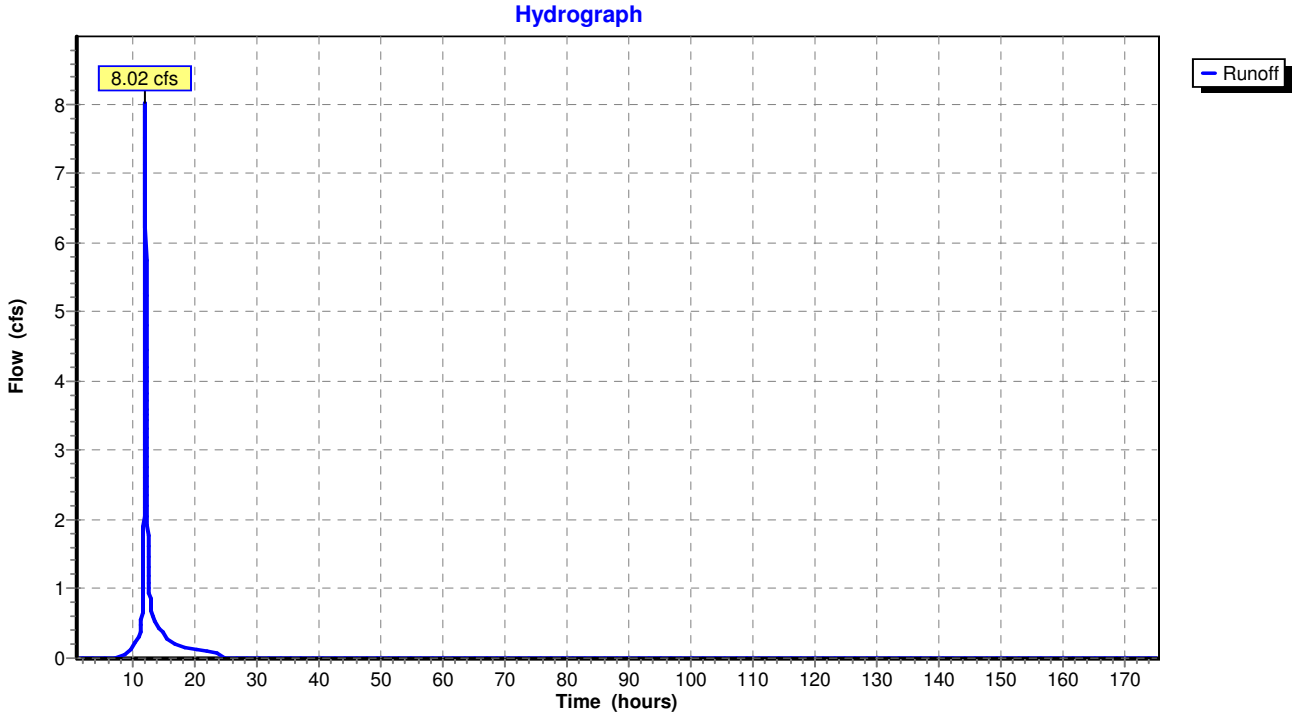
Runoff = 8.02 cfs @ 12.05 hrs, Volume= 0.523 af, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
1.400	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	70	0.2800	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"

Subcatchment 1.4:



Subcatchment 1.5:

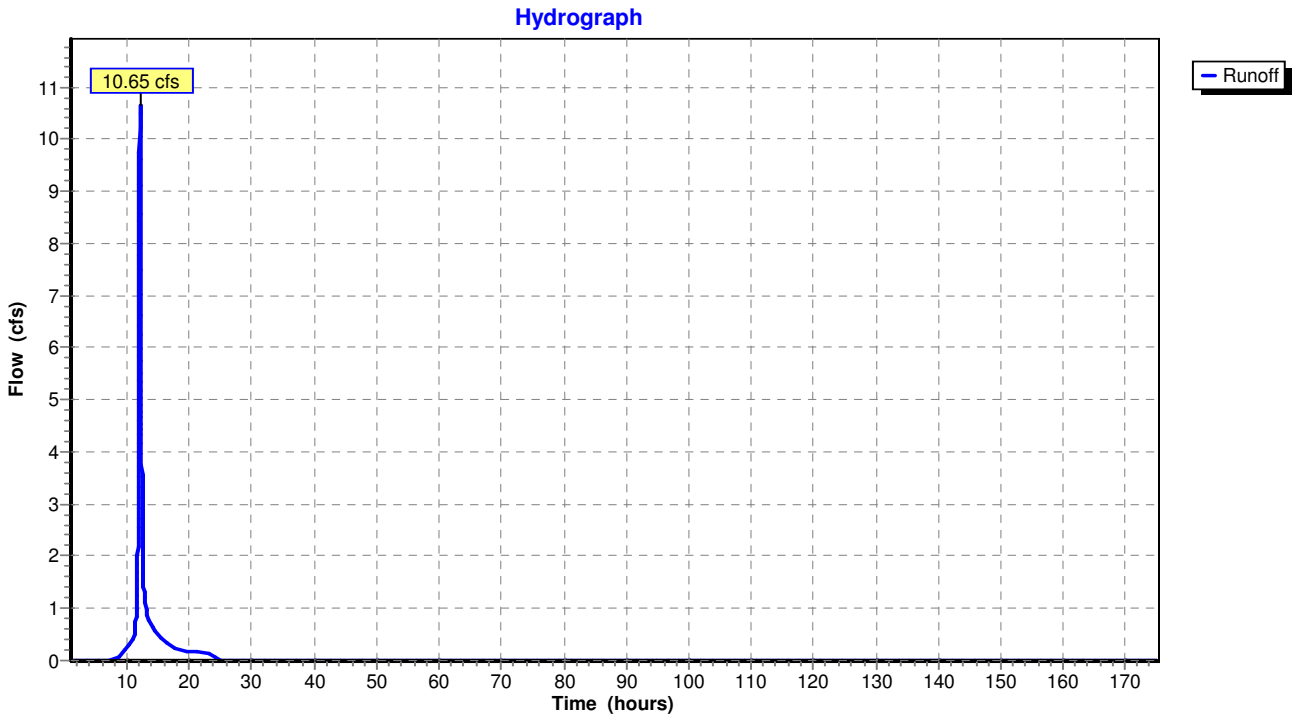
Runoff = 10.65 cfs @ 12.08 hrs, Volume= 0.747 af, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
2.000	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	53	0.0400	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	850	0.0200	11.0	176.03	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.0 '/' Top.W=12.00' n= 0.022 Earth, clean & straight
5.6	903	Total			

Subcatchment 1.5:



Subcatchment 2.0:

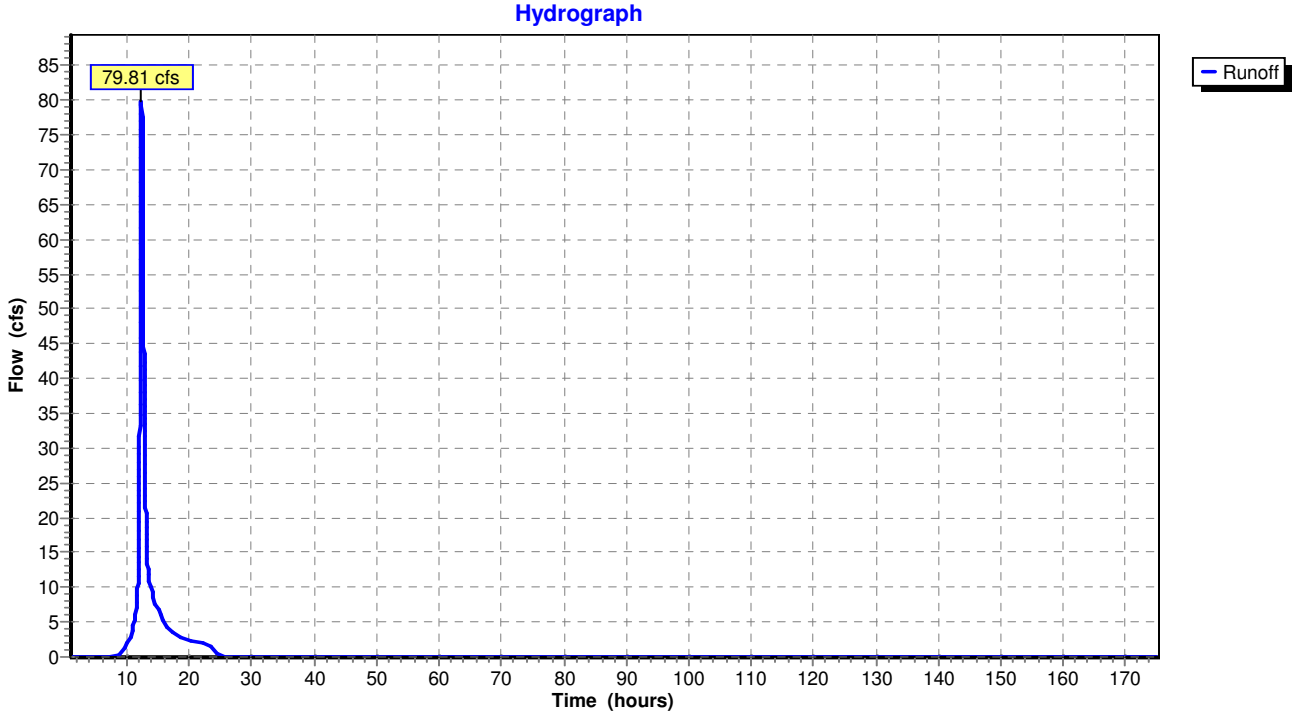
Runoff = 79.81 cfs @ 12.35 hrs, Volume= 9.262 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
16.000	70	Woods, Good, HSG C
10.100	74	>75% Grass cover, Good, HSG C
26.100	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.4	1,500	0.1400	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	170	0.0600	17.6	55.41	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
25.2	1,770	Total			

Subcatchment 2.0:



Subcatchment 3.1:

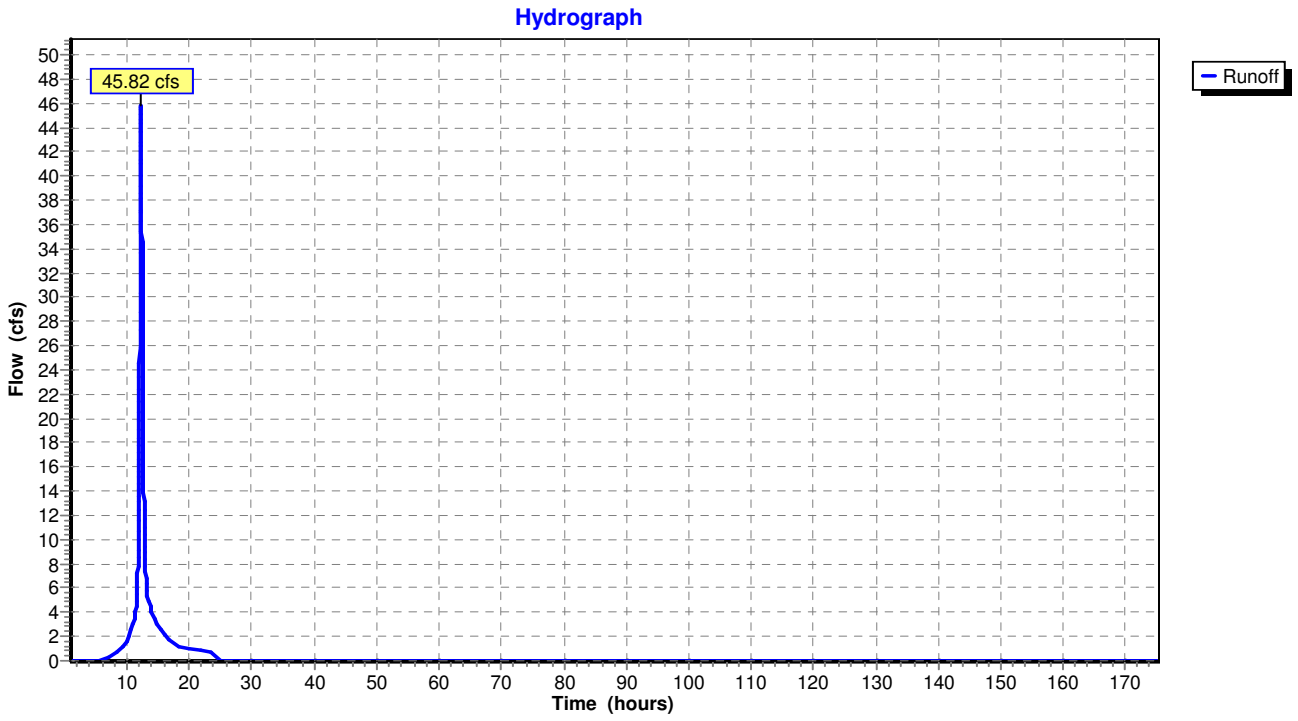
Runoff = 45.82 cfs @ 12.22 hrs, Volume= 4.569 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
3.800	94	Suburban Shopping Center
3.500	70	Woods, Good, HSG C
1.800	74	>75% Grass cover, Good, HSG C
1.300	79	1 acre lots, 20% imp, HSG C
10.400	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
8.7	1,100	0.0900	2.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	1,200	Total			

Subcatchment 3.1:



Subcatchment 3.2:

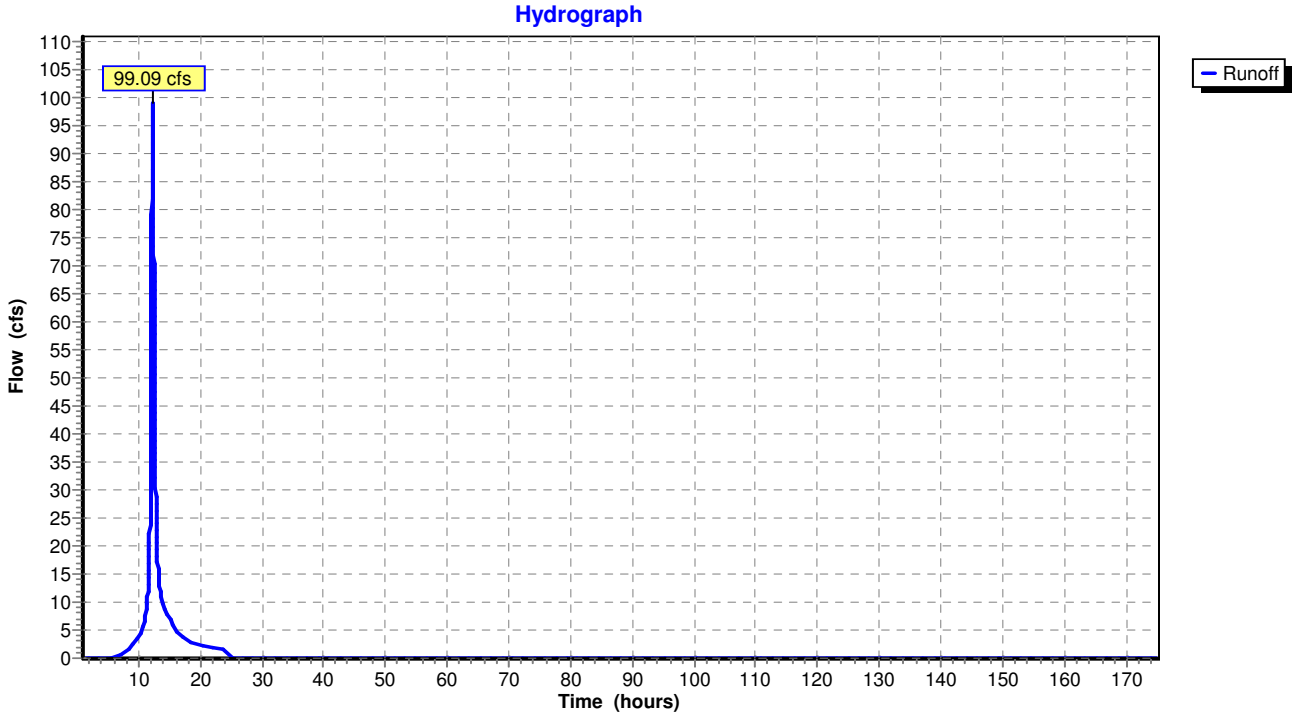
Runoff = 99.09 cfs @ 12.30 hrs, Volume= 10.983 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
1.000	70	Woods, Good, HSG C
7.500	98	Paved parking & roofs
16.500	74	>75% Grass cover, Good, HSG C
25.000	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
9.6	700	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	800	0.0500	16.1	50.59	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
22.0	1,600	Total			

Subcatchment 3.2:



Subcatchment 3.3:

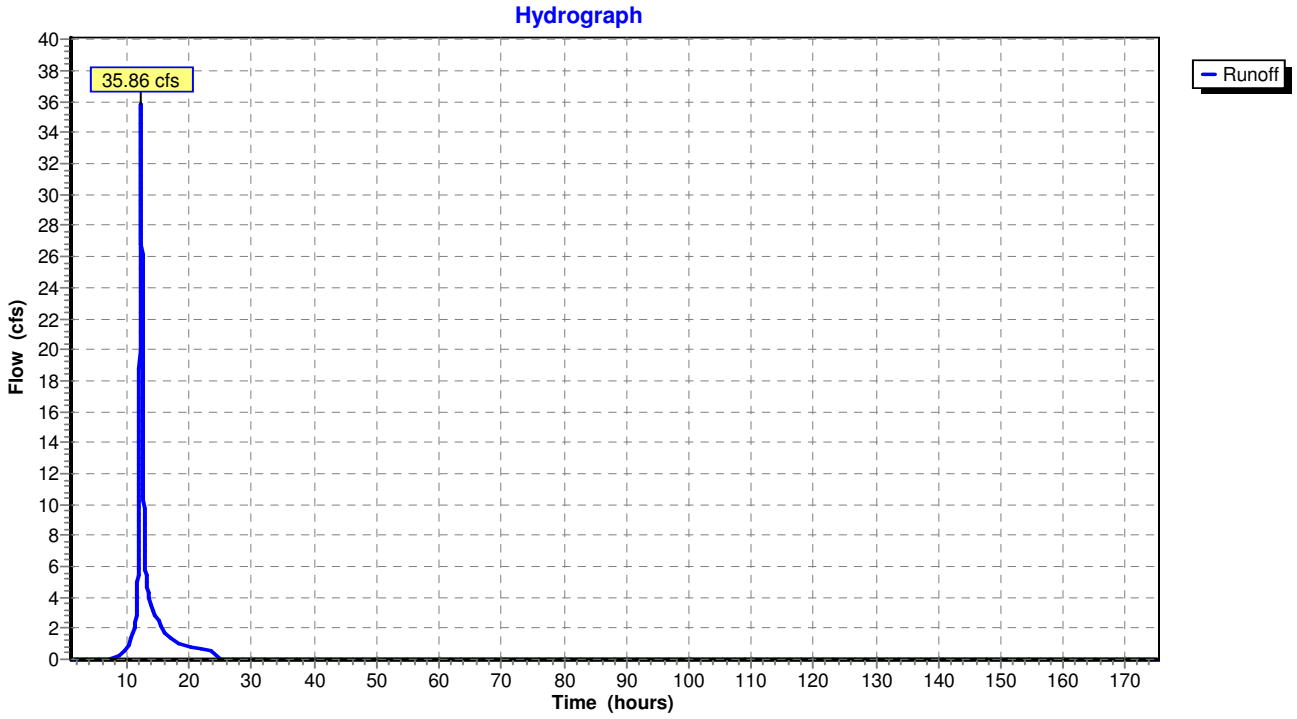
Runoff = 35.86 cfs @ 12.21 hrs, Volume= 3.442 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
0.700	98	Paved parking & roofs
9.000	70	Woods, Good, HSG C
9.700	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1400	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.5	780	0.1600	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.9	880	Total			

Subcatchment 3.3:



Subcatchment 3.4:

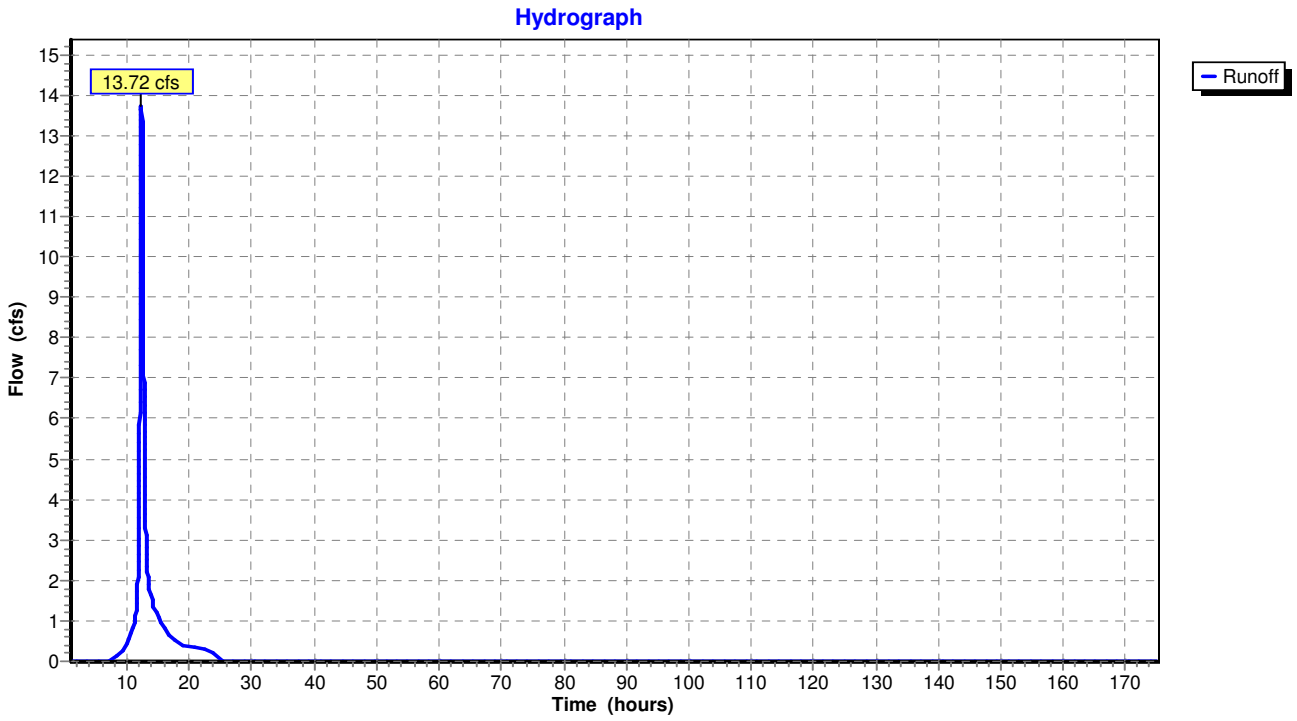
Runoff = 13.72 cfs @ 12.34 hrs, Volume= 1.568 af, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=7.50"

Area (ac)	CN	Description
2.800	79	1 acre lots, 20% imp, HSG C
1.200	70	Woods, Good, HSG C
4.000	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
13.8	1,530	0.0700	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	1,630	Total			

Subcatchment 3.4:



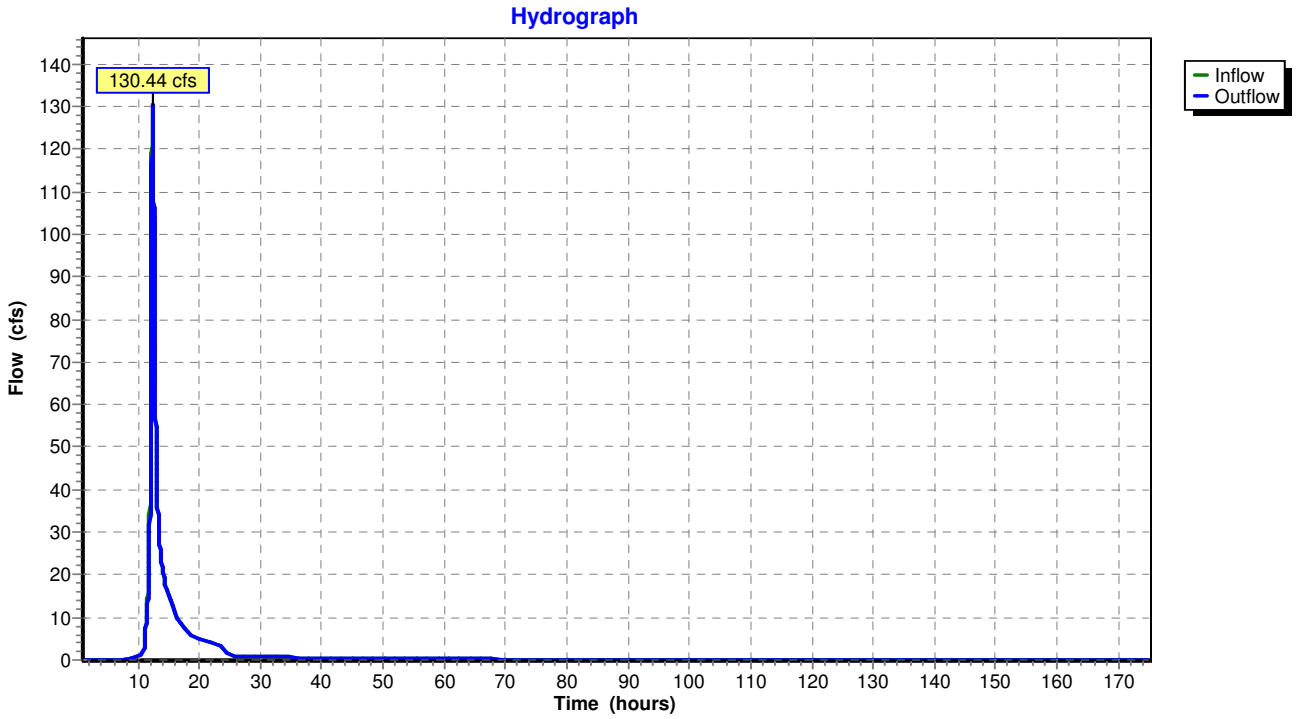
Reach Design Line 3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 49.100 ac, Inflow Depth > 4.99" for 100-year event
Inflow = 130.44 cfs @ 12.37 hrs, Volume= 20.408 af
Outflow = 130.44 cfs @ 12.38 hrs, Volume= 20.408 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Line 3:



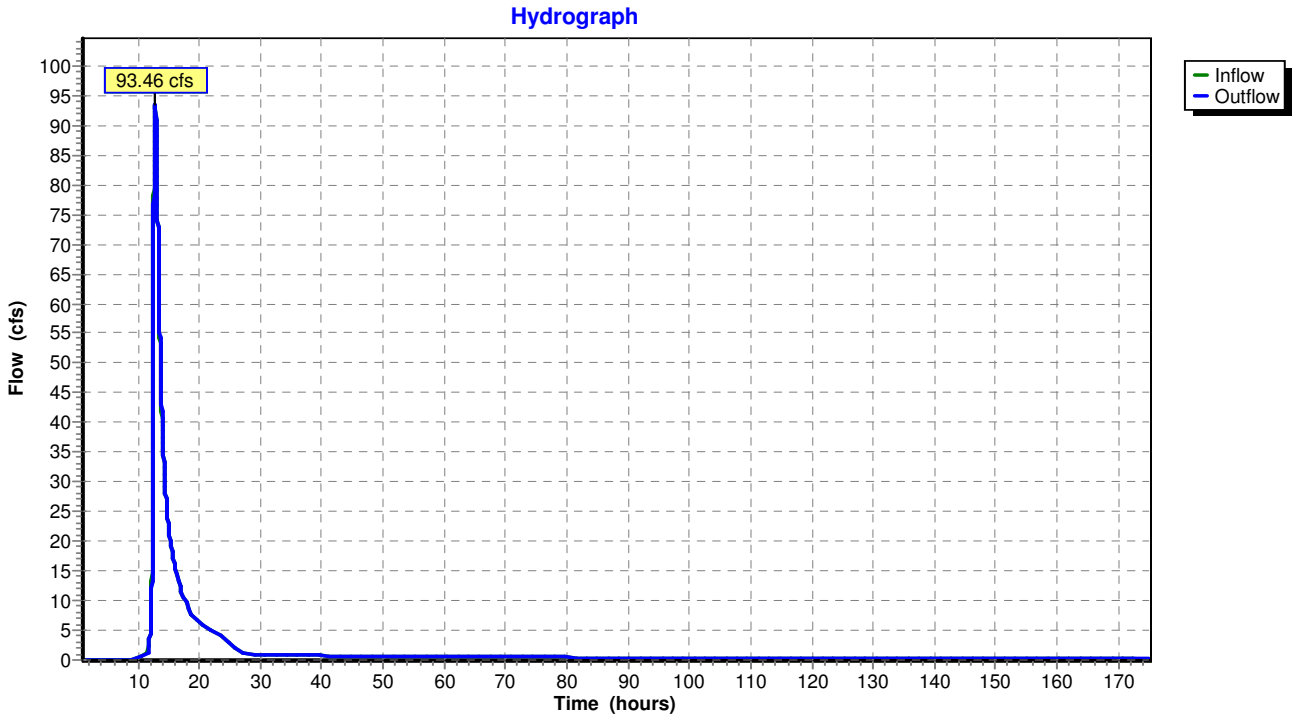
Reach Design Point 1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 50.900 ac, Inflow Depth > 5.69" for 100-year event
Inflow = 93.46 cfs @ 12.81 hrs, Volume= 24.131 af
Outflow = 93.46 cfs @ 12.82 hrs, Volume= 24.131 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 1:



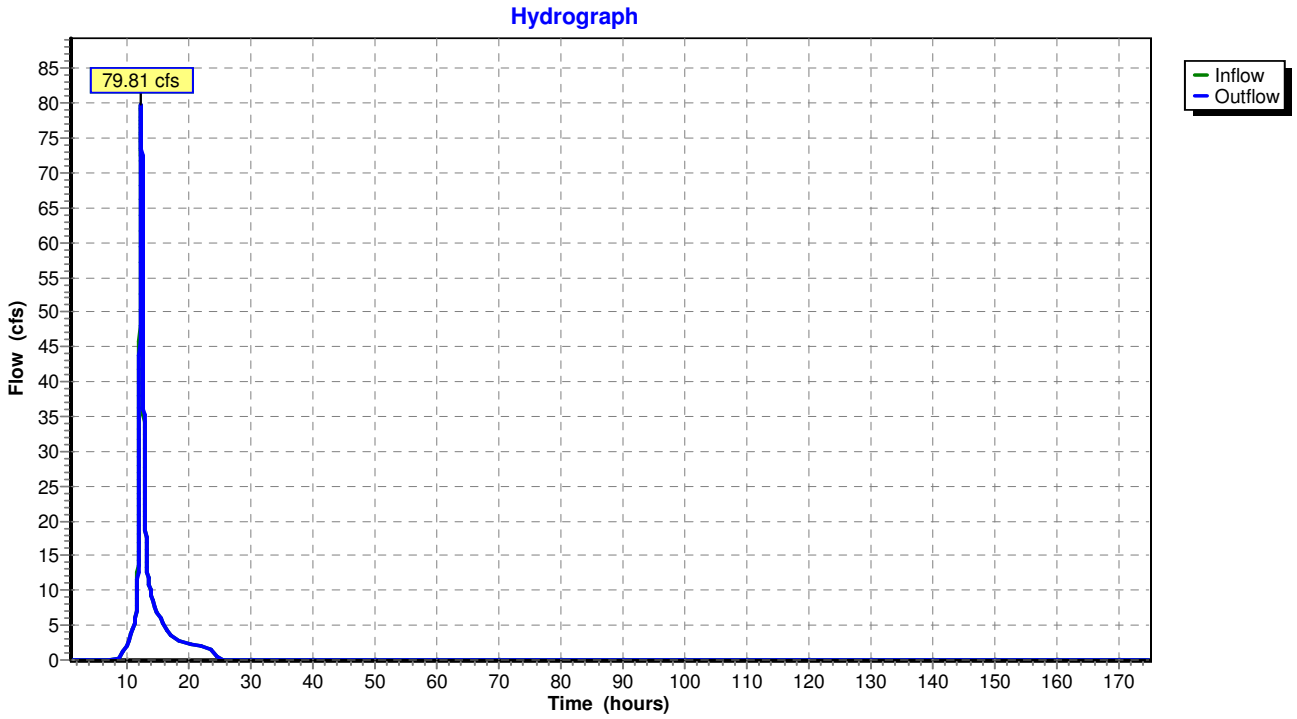
Reach Design Point 2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 26.100 ac, Inflow Depth = 4.26" for 100-year event
Inflow = 79.81 cfs @ 12.35 hrs, Volume= 9.262 af
Outflow = 79.81 cfs @ 12.36 hrs, Volume= 9.262 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs

Reach Design Point 2:



Pond 1.1P:

Inflow Area = 35.500 ac, Inflow Depth = 5.96" for 100-year event
Inflow = 168.25 cfs @ 12.24 hrs, Volume= 17.643 af
Outflow = 157.42 cfs @ 12.31 hrs, Volume= 17.562 af, Atten= 6%, Lag= 4.1 min
Primary = 73.93 cfs @ 12.31 hrs, Volume= 13.575 af
Secondary = 83.49 cfs @ 12.31 hrs, Volume= 3.987 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 780.20' Surf.Area= 33,940 sf Storage= 102,450 cf
Peak Elev= 784.00' @ 12.31 hrs Surf.Area= 56,526 sf Storage= 272,685 cf (170,235 cf above start)
Plug-Flow detention time= 633.9 min calculated for 15.209 af (86% of inflow)
Center-of-Mass det. time= 485.7 min (1,284.0 - 798.3)

Volume	Invert	Avail.Storage	Storage Description
#1	773.00'	348,200 cf	**Custom Stage Data (Prismatic)** Listed below

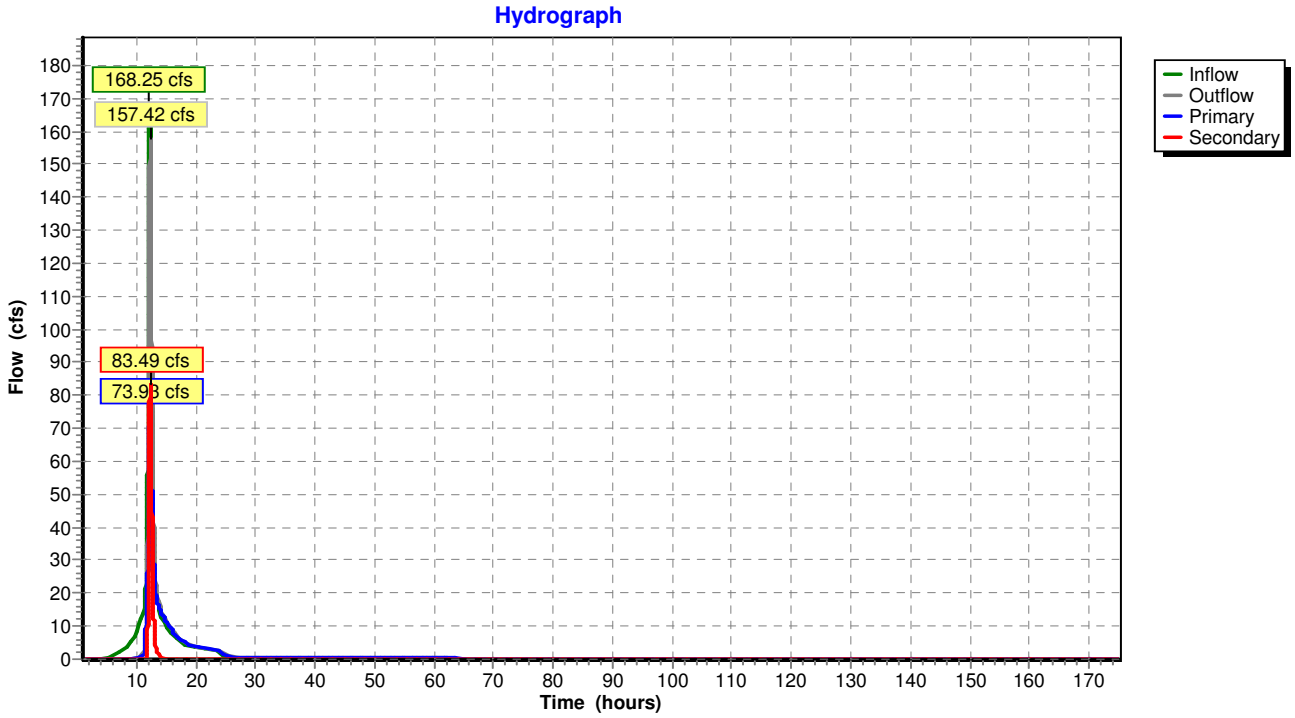
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
773.00	700	0	0
774.00	3,200	1,950	1,950
776.00	10,300	13,500	15,450
778.00	18,100	28,400	43,850
780.00	32,800	50,900	94,750
782.00	44,200	77,000	171,750
784.00	56,500	100,700	272,450
785.00	63,000	59,750	332,200
785.25	65,000	16,000	348,200

Device	Routing	Invert	Outlet Devices
#1	Primary	780.20'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	783.00'	**25.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	782.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=73.93 cfs @ 12.31 hrs HW=784.00' TW=774.69' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 9.2 fps)
└—**3=Broad-Crested Rectangular Weir** (Weir Controls 73.48 cfs @ 4.1 fps)

Secondary OutFlow Max=83.49 cfs @ 12.31 hrs HW=784.00' TW=774.69' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 83.49 cfs @ 3.3 fps)

Pond 1.1P:


Hydrograph
168.25 cfs
157.42 cfs
83.49 cfs
73.93 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180

Pond 1.2P:

Inflow Area = 36.600 ac, Inflow Depth > 5.89" for 100-year event
Inflow = 159.59 cfs @ 12.31 hrs, Volume= 17.973 af
Outflow = 140.76 cfs @ 12.42 hrs, Volume= 17.840 af, Atten= 12%, Lag= 6.9 min
Primary = 0.33 cfs @ 12.42 hrs, Volume= 2.252 af
Secondary = 140.43 cfs @ 12.42 hrs, Volume= 15.587 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 770.00' Surf.Area= 12,900 sf Storage= 33,300 cf
Peak Elev= 774.99' @ 12.42 hrs Surf.Area= 25,710 sf Storage= 130,176 cf (96,876 cf above start)
Plug-Flow detention time= 500.2 min calculated for 17.075 af (95% of inflow)
Center-of-Mass det. time= 194.5 min (1,467.8 - 1,273.3)

Volume	Invert	Avail.Storage	Storage Description
#1	766.00'	156,300 cf	**Custom Stage Data (Prismatic)** Listed below

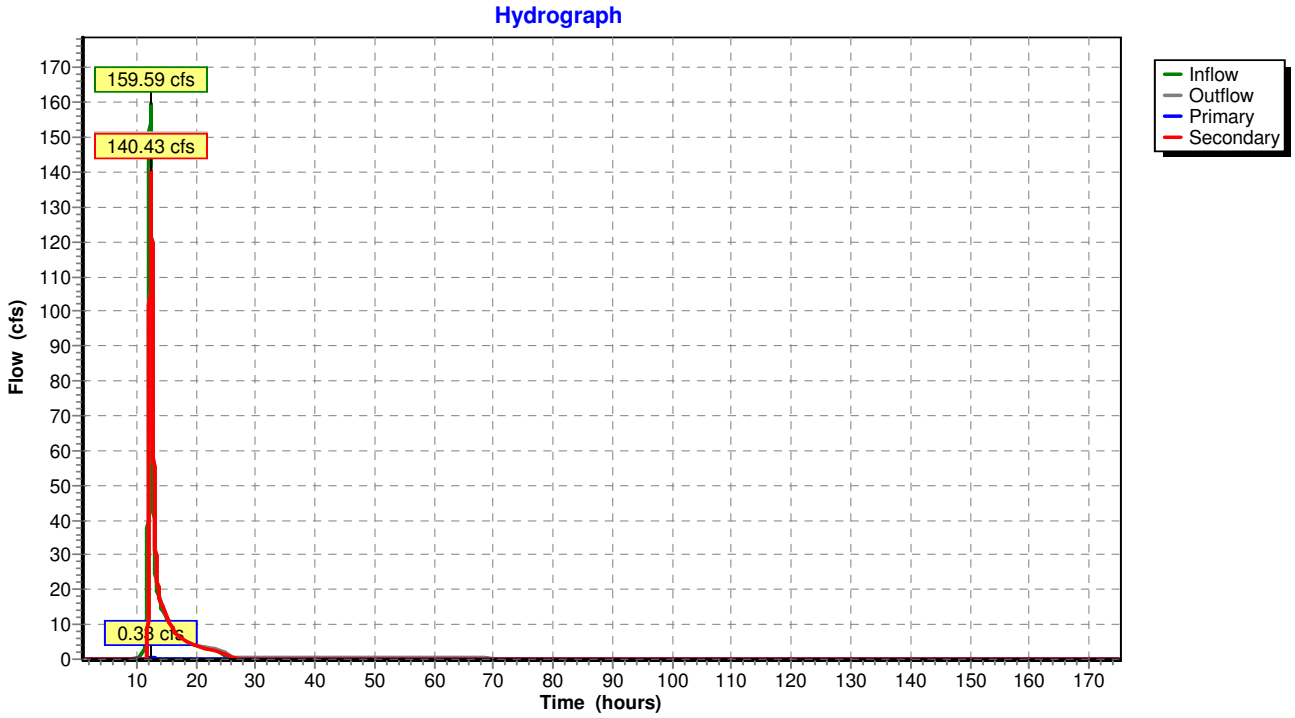
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
766.00	4,000	0	0
768.00	8,200	12,200	12,200
770.00	12,900	21,100	33,300
772.00	17,800	30,700	64,000
774.00	23,000	40,800	104,800
776.00	28,500	51,500	156,300

Device	Routing	Invert	Outlet Devices
#1	Primary	770.00'	**2.4" Vert. Orifice/Grate** C= 0.600
#2	Secondary	771.50'	**6.5' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.33 cfs @ 12.42 hrs HW=774.99' TW=762.81' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.33 cfs @ 10.6 fps)

Secondary OutFlow Max=140.40 cfs @ 12.42 hrs HW=774.99' TW=762.81' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 140.40 cfs @ 6.2 fps)

Pond 1.2P:


Hydrograph
159.59 cfs
140.43 cfs
0.38 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.3P:

Inflow Area = 10.900 ac, Inflow Depth = 6.08" for 100-year event
Inflow = 53.61 cfs @ 12.22 hrs, Volume= 5.523 af
Outflow = 17.11 cfs @ 12.67 hrs, Volume= 5.518 af, Atten= 68%, Lag= 26.7 min
Primary = 0.54 cfs @ 12.50 hrs, Volume= 2.446 af
Secondary = 16.62 cfs @ 12.67 hrs, Volume= 3.072 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 763.50' Surf.Area= 12,775 sf Storage= 36,875 cf
Peak Elev= 769.01' @ 12.67 hrs Surf.Area= 33,190 sf Storage= 161,358 cf (124,483 cf above start)
Plug-Flow detention time= 1,149.3 min calculated for 4.672 af (85% of inflow)
Center-of-Mass det. time= 909.3 min (1,703.8 - 794.4)

Volume	Invert	Avail.Storage	Storage Description
#1	758.00'	194,200 cf	**Custom Stage Data (Prismatic)** Listed below

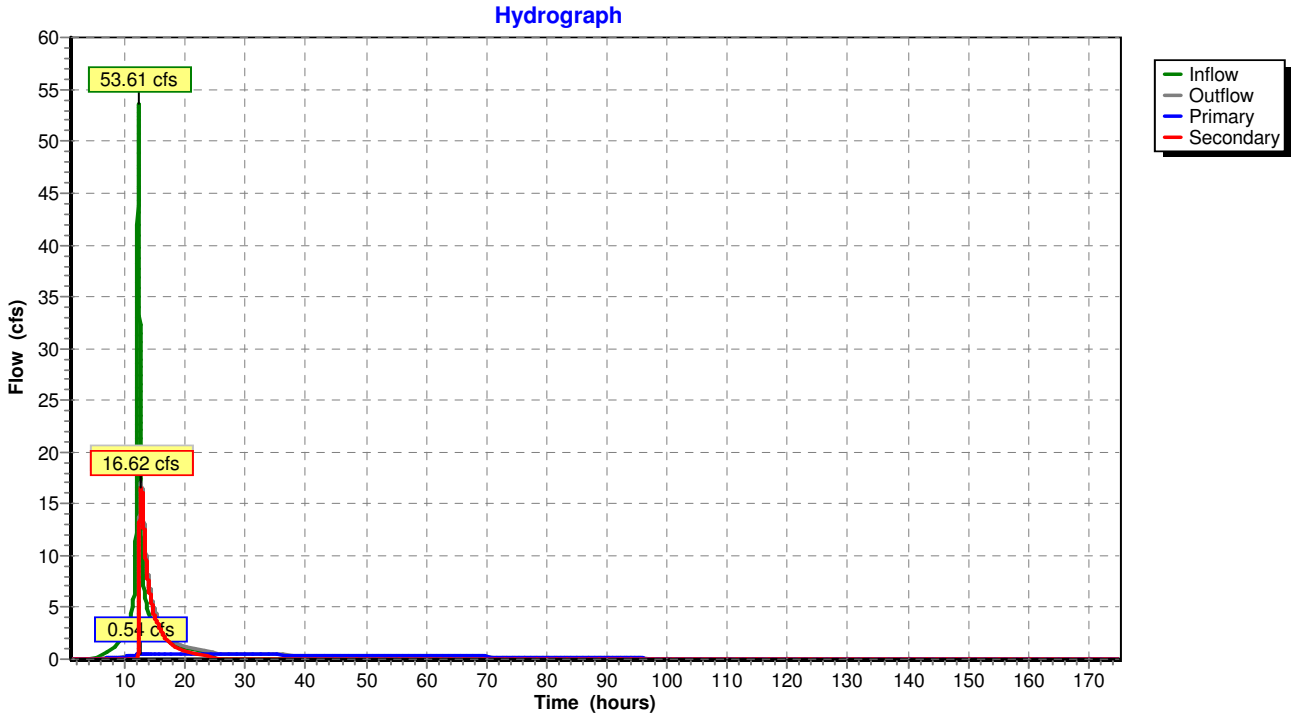
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
758.00	2,900	0	0
760.00	4,900	7,800	7,800
762.00	7,600	12,500	20,300
764.00	14,500	22,100	42,400
766.00	21,100	35,600	78,000
768.00	28,800	49,900	127,900
770.00	37,500	66,300	194,200

Device	Routing	Invert	Outlet Devices
#1	Primary	763.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	767.50'	**2.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.54 cfs @ 12.50 hrs HW=768.89' TW=763.66' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.54 cfs @ 11.0 fps)

Secondary OutFlow Max=16.62 cfs @ 12.67 hrs HW=769.01' TW=764.76' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 16.62 cfs @ 4.1 fps)

Pond 1.3P:


Hydrograph
53.61 cfs
16.62 cfs
0.54 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 1.4P:

Inflow Area = 48.900 ac, Inflow Depth > 5.86" for 100-year event
Inflow = 155.78 cfs @ 12.44 hrs, Volume= 23.881 af
Outflow = 92.24 cfs @ 12.82 hrs, Volume= 23.384 af, Atten= 41%, Lag= 22.7 min
Primary = 0.49 cfs @ 12.82 hrs, Volume= 3.823 af
Secondary = 91.75 cfs @ 12.82 hrs, Volume= 19.561 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 756.00' Surf.Area= 9,900 sf Storage= 20,400 cf
Peak Elev= 765.01' @ 12.82 hrs Surf.Area= 37,423 sf Storage= 238,916 cf (218,516 cf above start)
Plug-Flow detention time= 564.4 min calculated for 22.916 af (96% of inflow)
Center-of-Mass det. time= 275.9 min (1,784.0 - 1,508.1)

Volume	Invert	Avail.Storage	Storage Description
#1	752.00'	276,000 cf	**Custom Stage Data (Prismatic)** Listed below

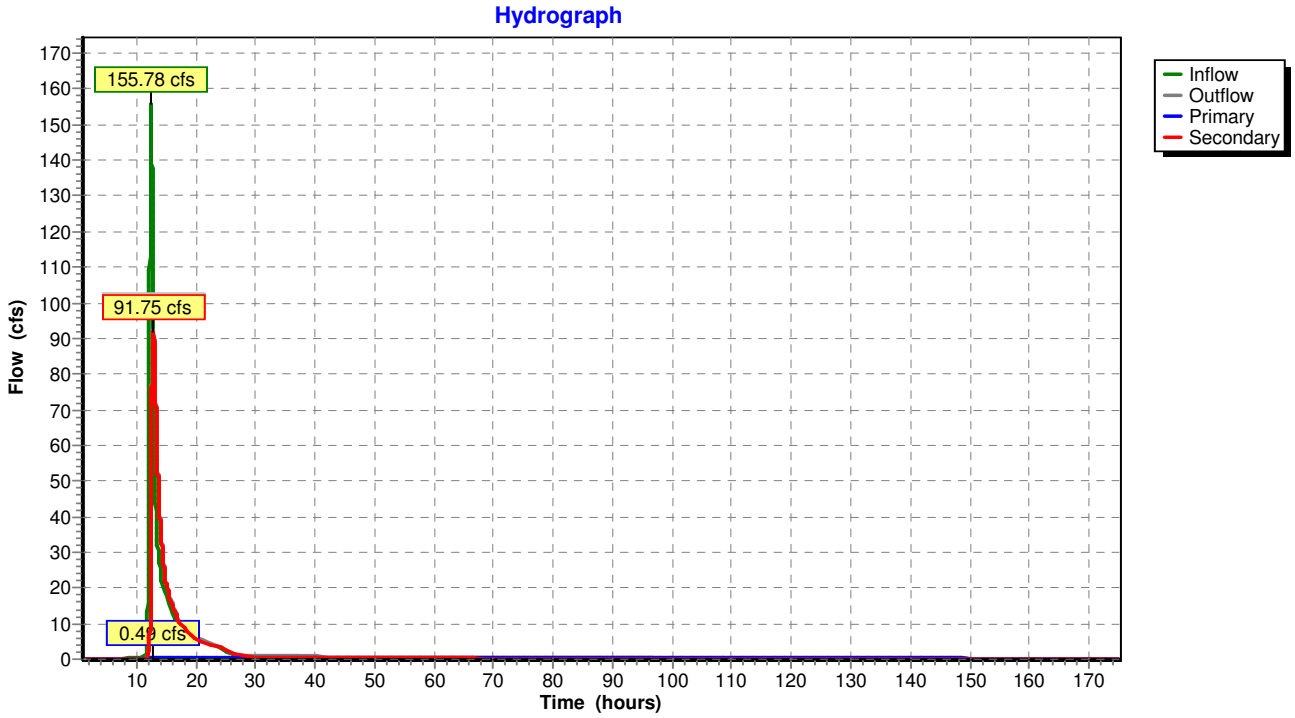
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
752.00	900	0	0
754.00	4,800	5,700	5,700
756.00	9,900	14,700	20,400
758.00	16,300	26,200	46,600
760.00	22,600	38,900	85,500
762.00	29,200	51,800	137,300
764.00	34,700	63,900	201,200
766.00	40,100	74,800	276,000

Device	Routing	Invert	Outlet Devices
#1	Secondary	759.25'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	756.00'	**2.5" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.49 cfs @ 12.82 hrs HW=765.01' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 0.49 cfs @ 14.4 fps)

Secondary OutFlow Max=91.75 cfs @ 12.82 hrs HW=765.01' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 91.75 cfs @ 8.0 fps)

Pond 1.4P:


Hydrograph
155.78 cfs
91.75 cfs
0.49 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.1P:

Inflow Area = 10.400 ac, Inflow Depth = 5.27" for 100-year event
Inflow = 45.82 cfs @ 12.22 hrs, Volume= 4.569 af
Outflow = 12.88 cfs @ 12.72 hrs, Volume= 4.565 af, Atten= 72%, Lag= 29.6 min
Primary = 0.63 cfs @ 12.72 hrs, Volume= 2.318 af
Secondary = 12.25 cfs @ 12.72 hrs, Volume= 2.247 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 718.00' Surf.Area= 9,500 sf Storage= 21,600 cf
Peak Elev= 722.95' @ 12.72 hrs Surf.Area= 32,558 sf Storage= 123,170 cf (101,570 cf above start)
Plug-Flow detention time= 957.4 min calculated for 4.069 af (89% of inflow)
Center-of-Mass det. time= 799.1 min (1,612.3 - 813.1)

Volume	Invert	Avail.Storage	Storage Description
#1	714.00'	157,600 cf	**Custom Stage Data (Prismatic)** Listed below

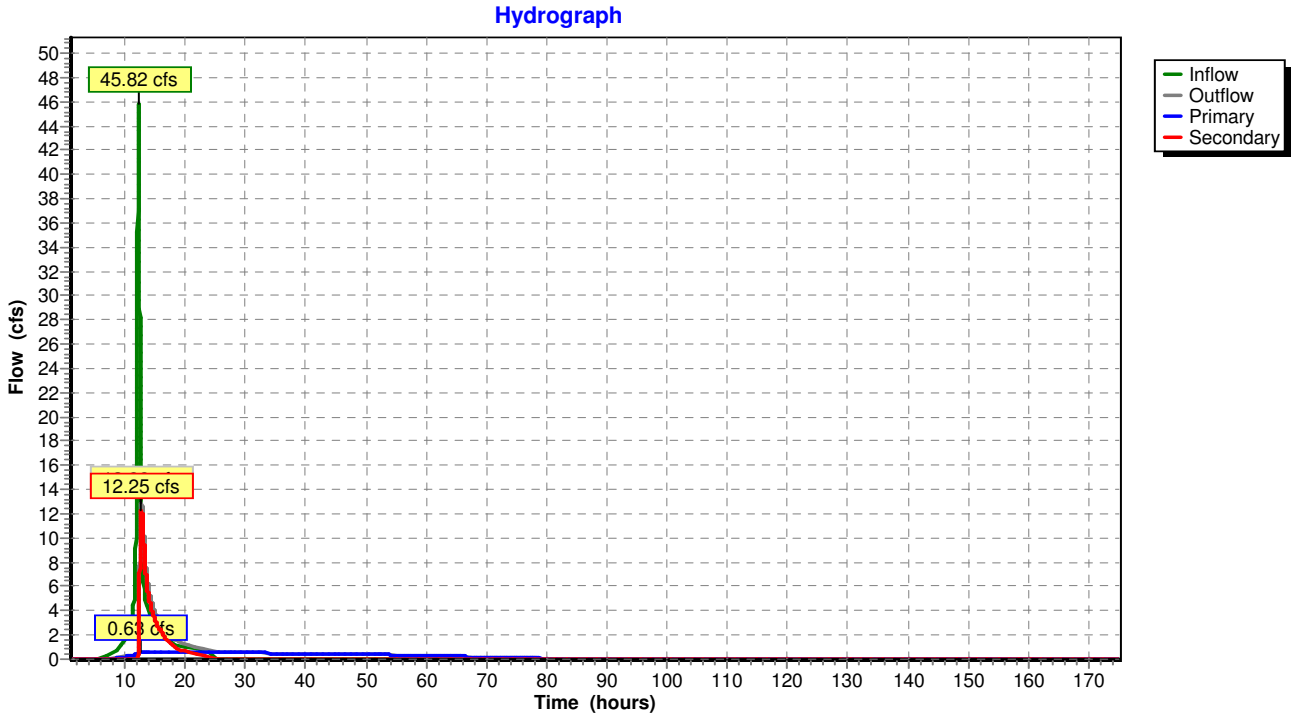
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.00	2,500	0	0
716.00	4,800	7,300	7,300
718.00	9,500	14,300	21,600
720.00	16,000	25,500	47,100
722.00	29,000	45,000	92,100
724.00	36,500	65,500	157,600

Device	Routing	Invert	Outlet Devices
#1	Primary	718.00'	**3.3" Vert. Orifice/Grate** C= 0.600
#2	Secondary	722.00'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.63 cfs @ 12.72 hrs HW=722.95' TW=674.62' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.63 cfs @ 10.6 fps)

Secondary OutFlow Max=12.25 cfs @ 12.72 hrs HW=722.95' TW=674.62' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 12.25 cfs @ 3.2 fps)

Pond 3.1P:


Hydrograph
45.82 cfs
12.25 cfs
0.63 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.2P:

Inflow Area = 35.400 ac, Inflow Depth = 5.27" for 100-year event
Inflow = 100.37 cfs @ 12.30 hrs, Volume= 15.548 af
Outflow = 95.86 cfs @ 12.39 hrs, Volume= 15.398 af, Atten= 4%, Lag= 5.3 min
Primary = 0.17 cfs @ 12.39 hrs, Volume= 1.579 af
Secondary = 95.69 cfs @ 12.39 hrs, Volume= 13.820 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 671.00' Surf.Area= 11,400 sf Storage= 24,850 cf
Peak Elev= 674.98' @ 12.39 hrs Surf.Area= 25,581 sf Storage= 98,701 cf (73,851 cf above start)
Plug-Flow detention time= 504.7 min calculated for 14.828 af (95% of inflow)
Center-of-Mass det. time= 347.5 min (1,398.5 - 1,051.0)

Volume	Invert	Avail.Storage	Storage Description
#1	666.00'	124,850 cf	**Custom Stage Data (Prismatic)** Listed below

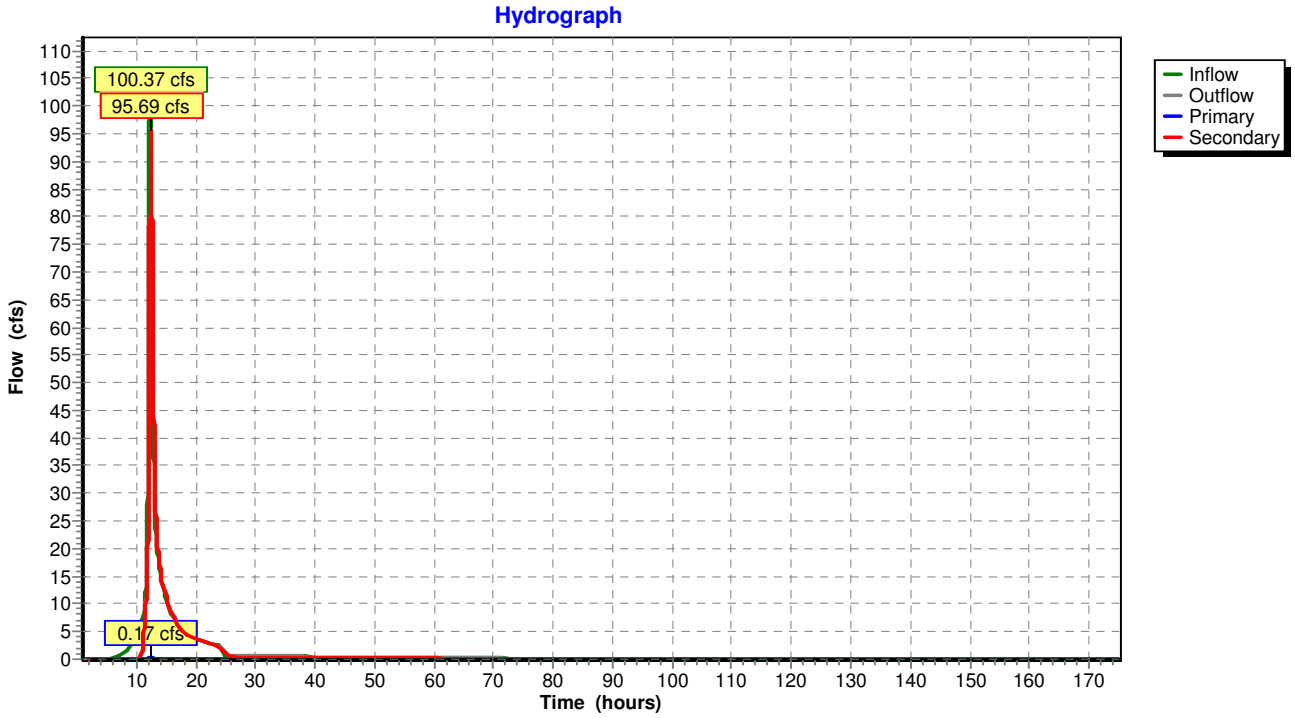
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
666.00	450	0	0
668.00	2,700	3,150	3,150
670.00	7,600	10,300	13,450
672.00	15,200	22,800	36,250
674.00	22,100	37,300	73,550
676.00	29,200	51,300	124,850

Device	Routing	Invert	Outlet Devices
#1	Primary	671.00'	**1.8" Vert. Orifice/Grate** C= 0.600
#2	Secondary	673.50'	**16.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.17 cfs @ 12.39 hrs HW=674.98' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.17 cfs @ 9.5 fps)

Secondary OutFlow Max=95.69 cfs @ 12.39 hrs HW=674.98' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 95.69 cfs @ 4.0 fps)

Pond 3.2P:


Hydrograph
100.37 cfs
95.69 cfs
0.17 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

Pond 3.4P:

Inflow Area = 4.000 ac, Inflow Depth = 4.71" for 100-year event
Inflow = 13.72 cfs @ 12.34 hrs, Volume= 1.568 af
Outflow = 10.49 cfs @ 12.53 hrs, Volume= 1.567 af, Atten= 24%, Lag= 11.7 min
Primary = 0.20 cfs @ 12.53 hrs, Volume= 0.467 af
Secondary = 10.29 cfs @ 12.53 hrs, Volume= 1.100 af

Routing by Sim-Route method, Time Span= 1.00-175.00 hrs, dt= 0.01 hrs
Starting Elev= 754.00' Surf.Area= 4,300 sf Storage= 8,000 cf
Peak Elev= 757.02' @ 12.53 hrs Surf.Area= 9,033 sf Storage= 29,001 cf (21,001 cf above start)
Plug-Flow detention time= 423.6 min calculated for 1.384 af (88% of inflow)
Center-of-Mass det. time= 314.7 min (1,146.0 - 831.3)

Volume	Invert	Avail.Storage	Storage Description
#1	750.00'	37,800 cf	**Custom Stage Data (Prismatic)** Listed below

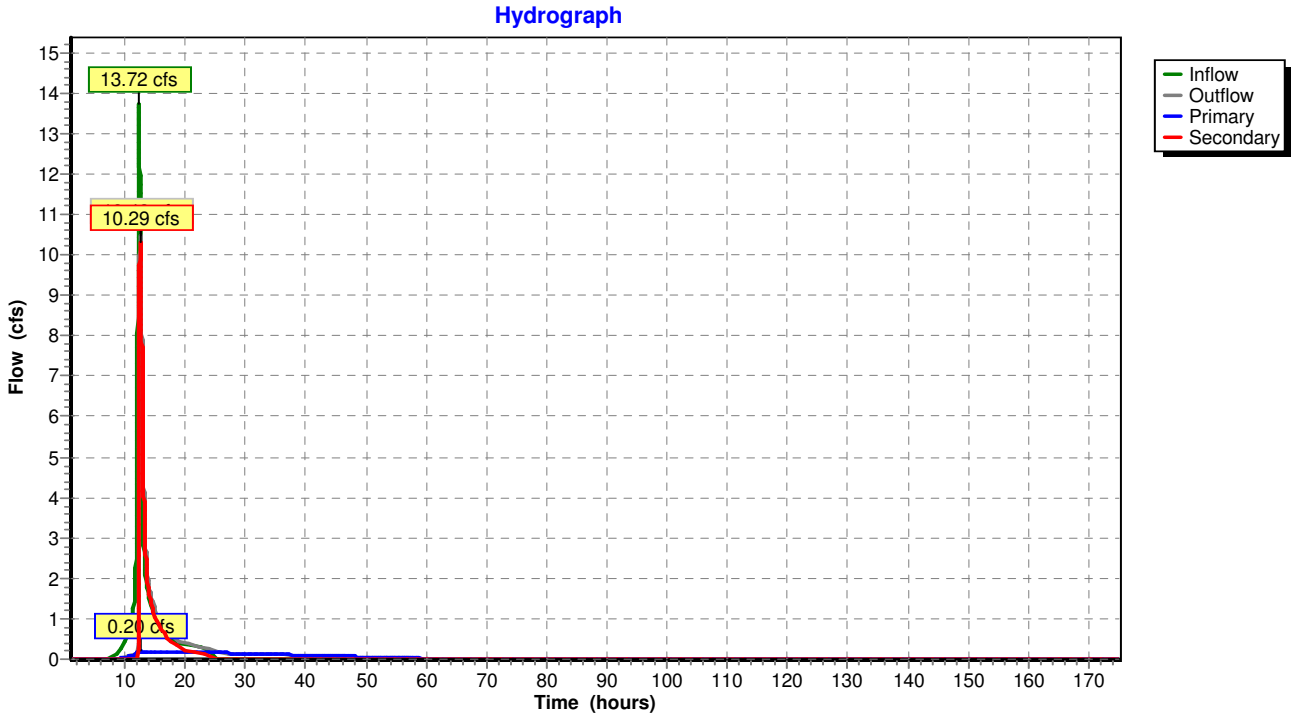
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
750.00	500	0	0
752.00	1,600	2,100	2,100
754.00	4,300	5,900	8,000
756.00	7,500	11,800	19,800
758.00	10,500	18,000	37,800

Device	Routing	Invert	Outlet Devices
#1	Primary	754.00'	**2.1" Vert. Orifice/Grate** C= 0.600
#2	Secondary	756.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.20 cfs @ 12.53 hrs HW=757.02' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 0.20 cfs @ 8.2 fps)

Secondary OutFlow Max=10.29 cfs @ 12.53 hrs HW=757.02' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 10.29 cfs @ 3.4 fps)

Pond 3.4P:


Hydrograph
13.72 cfs
10.29 cfs
0.20 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

APPENDIX C

Annual Pollutant Loading Rate Calculations

PRE-DEVELOPMENT ANNUAL POLLUTANT LOADS DESIGN POINT 1

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Forest	33.50	7.0	0.10	1.8	77.0	234.5	3.35	60.3	2579.5
Single Family (Low Density)	4.50	23.0	0.49	3.6	178.0	103.5	2.21	16.2	801.0
					TOTAL	338.0	5.56	76.5	3380.5

POST-DEVELOPMENT ANNUAL POLLUTANT LOADS

1.1

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Commercial	23.00	163.0	0.71	4.6	717.0	3749.0	16.33	105.8	16491.0
Forest	1.30	7.0	0.10	1.8	77.0	9.1	0.13	2.3	100.1
Single Family (Low Density)	1.50	23.0	0.49	3.6	178.0	34.5	0.74	5.4	267.0
Grass	9.70	7.0	0.12	3.7	308.0	67.9	1.16	35.9	2987.6
					TOTAL	3860.5	18.36	149.4	19845.7
						40%	40%	20%	80%
						to	to	to	to
DESIGN 2 EXTENDED DETENTION BASIN (1.1P) POLLUTANT REMOVAL EFFICIENCIES						60%	60%	40%	100%
						2316.3	11.02	119.5	3969.1
						to	to	to	to
					SUBTOTALS	1544.2	7.34	89.7	0.0
						40%	40%	20%	80%
						to	to	to	to
DESIGN 2 EXTENDED DETENTION BASIN (1.2P) POLLUTANT REMOVAL EFFICIENCIES						60%	60%	40%	100%
						1389.8	6.61	95.6	793.8
						to	to	to	to
					SUBTOTALS	617.7	2.94	53.8	0.0
						40%	40%	20%	80%
						to	to	to	to
DESIGN 2 EXTENDED DETENTION BASIN (1.4P) POLLUTANT REMOVAL EFFICIENCIES						60%	60%	40%	100%
						833.9	3.97	76.5	158.8
						to	to	to	to
					TOTALS AFTER TREATMENT	247.1	1.17	32.3	0.0

1.2

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Grass	1.10	7.0	0.12	3.7	308.0	7.7	0.13	4.1	338.8
					TOTAL	7.7	0.13	4.1	338.8
						40%	40%	20%	80%
						to	to	to	to
DESIGN 2 EXTENDED DETENTION BASIN (1.2P) POLLUTANT REMOVAL EFFICIENCIES						60%	60%	40%	100%
						4.6	0.08	3.3	67.8
						to	to	to	to
					SUBTOTALS	3.1	0.05	2.4	0.0
						40%	40%	20%	80%
						to	to	to	to
DESIGN 2 EXTENDED DETENTION BASIN (1.4P) POLLUTANT REMOVAL EFFICIENCIES						60%	60%	40%	100%
						2.8	0.05	2.6	13.6
						to	to	to	to
					SUBTOTALS	1.2	0.02	1.5	0.0

1.3

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Commercial	7.40	163.0	0.71	4.6	717.0	1206.2	5.25	34.0	5305.8
Grass	1.80	7.0	0.12	3.7	308.0	12.6	0.22	6.7	554.4
Single Family (Low Density)	1.70	23.0	0.49	3.6	178.0	39.1	0.83	6.1	302.6
					TOTAL	1257.9	6.30	46.8	6162.8
						40%	40%	20%	80%
						to	to	to	to
					DESIGN 2 EXTENDED DETENTION BASIN (1.3P) POLLUTANT REMOVAL EFFICIENCIES	60%	60%	40%	100%
						754.7	3.78	37.5	1232.6
						to	to	to	to
					SUBTOTALS	503.2	2.52	28.1	0.0
						40%	40%	20%	80%
						to	to	to	to
					DESIGN 2 EXTENDED DETENTION BASIN (1.4P) POLLUTANT REMOVAL EFFICIENCIES	60%	60%	40%	100%
						452.8	2.27	30.0	246.5
						to	to	to	to
					TOTALS AFTER TREATMENT	201.3	1.01	16.9	0.0

1.4

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Grass	1.40	7.0	0.12	3.7	308.0	9.8	0.17	5.2	431.2
					TOTAL	9.8	0.17	5.2	431.2
						40%	40%	20%	80%
						to	to	to	to
					DESIGN 2 EXTENDED DETENTION BASIN (1.4P) POLLUTANT REMOVAL EFFICIENCIES	60%	60%	40%	100%
						5.9	0.10	4.1	86.2
						to	to	to	to
					SUBTOTALS	3.9	0.07	3.1	0.0

1.5

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Grass	2.00	7.0	0.12	3.7	308.0	14.0	0.24	7.4	616.0
					TOTAL	14.0	0.24	7.4	616.0
						1309.4	6.62	120.6	1121.1
						to	to	to	to
					TOTALS AFTER TREATMENT	467.5	2.51	61.1	616.0

PRE-DEVELOPMENT ANNUAL POLLUTANT LOADS DESIGN POINT 2

PRE 2

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Forest	41.30	7.0	0.10	1.8	77.0	289.1	4.13	74.3	3180.1
					TOTAL	289.1	4.13	74.3	3180.1

POST-DEVELOPMENT ANNUAL POLLUTANT LOADS DESIGN POINT 2

2.0

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Forest	16.00	7.0	0.10	1.8	77.0	112.0	1.60	28.8	1232.0
Grass	10.10	7.0	0.12	3.7	308.0	70.7	1.21	37.4	3110.8
					TOTAL	182.7	2.81	66.2	4342.8

PRE-DEVELOPMENT ANNUAL POLLUTANT LOADS DESIGN LINE 3

PRE 3

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Forest	25.40	7.0	0.10	1.8	77.0	177.8	2.54	45.7	1955.8
Grass	12.50	7.0	0.12	3.7	308.0	87.5	1.50	46.3	3850.0
Road	6.50	163.0	1.00	2.1	447.0	1059.5	6.50	13.7	2905.5
Single Family (High Density)	2.80	23.0	0.58	3.6	178.0	64.4	1.62	10.1	498.4
					TOTAL	1389.2	12.16	115.7	9209.7

POST-DEVELOPMENT ANNUAL POLLUTANT LOADS DESIGN LINE 3

3.1

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Forest	3.50	7.0	0.10	1.8	77.0	24.5	0.35	6.3	269.5
Grass	1.80	7.0	0.12	3.7	308.0	12.6	0.22	6.7	554.4
Commercial	3.80	163.0	0.71	4.6	717.0	619.4	2.70	17.5	2724.6
Single Family (High Density)	1.30	23.0	0.58	3.6	178.0	29.9	0.75	4.7	231.4
					TOTAL	686.4	4.02	35.1	3779.9
						40%	40%	20%	80%
						to	to	to	to
DESIGN 2 EXTENDED DETENTION BASIN (3.1P)	**POLLUTANT REMOVAL EFFICIENCIES**					60%	60%	40%	100%
						411.8	2.41	28.1	756.0
						to	to	to	to
					SUBTOTALS	274.6	1.61	21.1	0.0
						40%	40%	20%	80%
						to	to	to	to
DESIGN 2 EXTENDED DETENTION BASIN (3.2P)	**POLLUTANT REMOVAL EFFICIENCIES**					60%	60%	40%	100%
						247.1	1.45	22.5	151.2
						to	to	to	to
					TOTALS AFTER TREATMENT	109.8	0.64	12.6	0.0

3.2

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Road	7.50	163.0	1.00	2.1	447.0	1222.5	7.50	15.8	3352.5
Forest	1.00	7.0	0.10	1.8	77.0	7.0	0.10	0.2	138.6
Grass	16.50	7.0	0.12	3.7	308.0	115.5	1.98	61.1	5082.0
					TOTAL	1345.0	9.58	77.0	8573.1
						40%	40%	20%	80%
						to	to	to	to
DESIGN 2 EXTENDED DETENTION BASIN (3.2P)	**POLLUTANT REMOVAL EFFICIENCIES**					60%	60%	40%	100%
						807.0	5.75	61.6	1714.6
						to	to	to	to
					TOTALS AFTER TREATMENT	538.0	3.83	46.2	0.0

3.3

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Road	0.70	163.0	1.00	2.1	447.0	114.1	0.70	1.5	312.9
Forest	9.00	7.0	0.10	1.8	77.0	63.0	0.90	0.2	138.6
					TOTAL	177.1	1.60	1.7	451.5

3.4

		Rates (lb/ac/yr)				Annual Loads (lb/yr)			
Land use/Ground Cover	**Area (Acres)**	**BOD**	**TP**	**TN**	**TSS**	**BOD**	**TP**	**TN**	**TSS**
Single Family (High Density)	2.80	23.0	0.58	3.6	178.0	64.4	1.62	10.1	498.4
Forest	1.20	7.0	0.10	1.8	77.0	8.4	0.12	0.2	138.6
					TOTAL	72.8	1.74	10.3	637.0
						40%	40%	20%	80%
						to	to	to	to
DESIGN 2 EXTENDED DETENTION BASIN (3.4P)	**POLLUTANT REMOVAL EFFICIENCIES**					60%	60%	40%	100%
						43.7	1.05	8.2	127.4
						to	to	to	to
					SUBTOTALS	29.1	0.70	6.2	0.0
						1274.9	9.84	93.9	2444.7
						to	to	to	to
					TOTALS AFTER TREATMENT	854.0	6.77	66.6	451.5

APPENDIX D

Project and Owner Information

Site Data:

Patterson Crossing Retail center
NYS Route 311
Patterson and Kent NY

Tax Map Number: 22.-3-1, 32.-2-2, 33.-2-23 and 34.-2-3 in the Town of Patterson,
22.-2-48 in the Town of Kent.

Area: 90.5±

Owner Information:

Hudson Valley Realty Corp.
1699 Route 6, Suite 1
Carmel, New York 10512
845-228-1400

Party Responsible for Implementation of the Stormwater Pollution Prevention Plan:

Contractor to be determined at time of construction

Party Responsible for Inspection of the Stormwater Pollution Prevention Plan:

Inspector to be determined at time of construction

APPENDIX E

NYSDEC SPDES for Construction Activities Construction Site Log Book

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

I. Pre-Construction Meeting Documents.

a. Preamble to Site Assessment and Inspections

b. Operator's Certification

c. Qualified Professional's Credentials & Certification

d. Contractors Certification

e. Pre-Construction Site Assessment Checklist

a.

II. Construction Duration Inspections

a. Directions

b. Modification to the SWPPP

III. Monthly Summary Reports

a

Properly completing forms such as those contained in this document meet the inspection requirement of NYSDEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____
Permit No. _____**Date of Authorization**_____
Name of Operator _____
Prime Contractor _____

a. Preamble to Site Assessment and Inspections -The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law. "

Name (please print):_____

Title _____ **Date:**_____

Address: _____

Phone: _____ **Email:**_____

Signature:_____

c. Qualified Professional's Credentials & Certification

" I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Contractors Certification Statement

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the Stormwater Pollution Prevention Plan for the construction site identified in such plans as a condition of authorization to discharge storm water. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") General Permit for Storm Water Discharges from Construction Activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards.

_____

Signature of Contractor Date

Name of Contractor _____

Street Address _____

City, State, Zip _____

Telephone No. _____

A copy of this statement shall be retained as part of the Stormwater Pollution Prevention Plan (SPPP) for a period off at least three (3) years after the subject property is stabilized.

e. Pre-construction Site Assessment Checklist (NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

Pre-construction Site Assessment Checklist (continued)

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?

[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.

[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.

[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.

[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.

[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.

[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.

[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.

[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals

[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.

[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.

[ ] [ ] [ ] The plan is contained in the SWPPP on page _____

[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA

[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?

[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?

[ ] [ ] [ ] All disturbance is within the limits of the approved plans.

[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

[ ] [ ] [ ] Is construction site litter and debris appropriately managed?

[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?

[ ] [ ] [ ] Is construction impacting the adjacent property?

[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.

[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.

[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?

[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.

[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.

[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.

[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.

[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.

[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.

[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.

[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

Sediment Control (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS
b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

_____ _____

Signature of Permittee or Duly Authorized Representative Name of Permittee or Duly Authorized Representative date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

APPENDIX F

Supplemental Phosphorus Loading Calculation (Simple Method)

A pollutant loading analysis for the proposed development has been completed using the "coefficient method" to meet the requirements of the State and City stormwater regulations. This pollutant loading analysis is shown in the Appendix C of this report. The calculations show an overall reduction in phosphorus loads discharging from the site in the proposed condition for all of the design points. In addition to these calculations the New York State Watershed Inspector General has requested that the "Simple Method" be used to calculate phosphorus loading. The Simple Method used in conjunction with the 1996 Terrene Institutes publication A *Watershed Approach to Urban Runoff* is a site-specific method for determining pollutant loading.

The following is a summary of the simple method Pollutant Calculations as shown in Appendix A of this report.

L	=	$P \bullet P_j \bullet R_v \bullet C \bullet A \bullet 0.227$
L	=	Annual Pollutant Load in Pounds (A loading rate is the total amount of pollutants entering the system from one or multiple sources. It estimates pollutant discharge with different land use categories and if often expressed as pounds per acre per year in a watershed).
P	=	Annual Rainfall
P_j	=	0.9
R_v	=	0.05 + 0.009 • I (I=% Impervious)
C	=	Constant Pollutant Concentration
A	=	Source Area (acres)
0.227	=	Constant for Units (converts milligrams per liter or parts per million into pounds)
P	=	45.0" rainfall

2.1 Middle Branch Reservoir Basin Pollutant Loading Analysis

As previously discussed the stormwater runoff discharging to the Middle Branch Reservoir includes the runoff from the northern portion of the site including the access road, and the off site runoff from NYS Route 311 and Interstate I-84, as well as the residential development of north Lake Carmel. The following tables are summaries of the calculations for the phosphorus loading to the Middle Branch Reservoir.

Table 1: The Runoff Coefficient for Specific Land Use

Land Use	Impervious %*	R_v
Urban Open, Grass	9	0.131
Residential, (low density)	21	0.23
Forest	2	0.068
Commercial	68	0.662
Roads	100	0.95

* (NYS Stormwater Management Design Manual, 2003, pages 4-2 and 4-3)

Table 2: Total Existing Annual Phosphorus Load (in pounds)

Land Use Category **	Area (acres)	C (for total phosphorus [TP])** (mg/L)	Load (pounds)
Forest	25.4	0.11	1.75
Residential	2.8	0.52	3.08
Urban Open, Grass	12.5	0.11	1.66
Roads	6.5	0.43	24.41
Commercial	-	0.33	-
Total Existing Annual Phosphorus Load			**30.90**

*** A Watershed Approach to Urban Runoff (Terrene Institute 1996).*

Table 3: Future Ground Cover Conditions by Subcatchment Areas (in acres)

	Subcatchments			
Land Use	**3.1**	**3.2**	**3.3**	**3.4**
Grass	1.8	16.5	-	-
Road	-	7.5	0.7	-
Commercial	3.8	-	-	-
Residential	1.3	-	-	2.8
Forest	3.5	1.0	9.0	1.2
Totals	**10.4**	**25.0**	**9.7**	**4.0**

Table 4: Total Future Annual Phosphorus Load (in pounds) by Subcatchment without treatment

	Subcatchments			
Land Use	**3.1**	**3.2**	**3.3**	**3.4**
Grass	0.24	2.19	-	-
Road	-	28.17	2.63	-
Commercial	7.63	-	-	-
Residential	1.43	-	-	3.08
Forest	0.24	0.07	0.6	0.08
Totals	**9.54**	**30.43**	**3.25**	**3.16**

The proposed treatment practices are micropool extended detention ponds. The removal efficiencies for these practices are taken from *Stormwater Best Management Practices Design Guide:*

Volume 1 General Considerations Appendix E. The removal efficiency for a wet pond is 51% per the design guide. There are variations of the levels of treatment across the site ranging from no treatment to 2 levels of treatment. The efficiency of the practices in series are calculated using the formula:

*** $Es = 1 - [x \bullet (1-E_1)(1-E_2)\ldots]$ where X = 1.25 penalty
*** (See *Fundamentals of Urban Runoff Management: Technical and Institutional Issues* published by the Terrene Institute 1996).

Drainage area 3.1 will receive 2 levels of treatment in the proposed condition. The treatment practices consist of two wet ponds in series. The efficiency for 2 levels of treatment is:

$$E_s = 1-[(1.25)(1-.51)(1-.51)]$$
$$E_s = 0.70$$

Drainage areas 3.2 and 3.4 will receive 1 level of treatment in the proposed condition. The treatment practice for each of these areas is one wet pond. The efficiency for 1 level of treatment is:

$$E_s = (1-.51)$$
$$E_s = 0.49$$

While the areas that will receive no levels of treatment are drainage area (3.3). The future loads are simply a sum of the loadings from the areas.

Table 5: Total Future Annual Phosphorus Load after Treatment

Drainage Areas	Untreated Annual Phosphorus Load (lbs)	Levels of Treatment	E_s	Phosphorus Removed (lbs)	Phosphorus Remaining (lbs)
3.1	9.54	2	0.70	6.68	2.86
3.2, 3.4	33.59	1	0.49	16.46	17.13
3.3	3.25	-	-	-	3.25
Total Future Annual Phosphorus Load after Treatment					**23.24 (lbs)**

Table 6: Annual Phosphorus Loading Summary to the Middle Branch Reservoir

Total Existing Annual Phosphorus Load to Middle Branch Reservoir	**30.90 (lbs)**
Total Future Annual Phosphorus Load to Middle Branch Reservoir	**23.24 (lbs)**

As shown in the summary above the phosphorus loading analysis performed using the simple method shows a reduction in the phosphorus loading in the proposed condition, benefiting the long-term goals of the TMDL initiative within the New York City Watershed.

2.2 East Branch Reservoir Basin Pollutant Loading Analysis

As previously discussed the stormwater runoff discharging to the East Branch Reservoir includes the majority of the stormwater runoff from the proposed development of the site as well as, the undeveloped hillside to the south of the proposed development. The analysis of the East Branch Reservoir includes offsite improvements at the Putnam County Highway Facility, shown as subcatchments PC-1 and PC-2 on Figure 5. As part of the subject project it is proposed to treat the offsite subcatchments to provide a benefit to the reservoir basin to provide an overall reduction in phosphorus loading in the post development condition. The proposed stormwater improvements for the treatment of subcatchment PC-1 will be solely funded by the Patterson Crossing Project, with the stormwater improvements for the treatment of PC-2 will be funded by both the Patterson Crossing project and Putnam County. Therefore removal credit for the offsite improvements will be 100% for the improvements within subcatchment PC-1 and 50% within subcatchment PC-2. The following tables are summaries of the calculations for the phosphorus loading to the East Branch Reservoir.

Table 7: The Runoff Coefficient for Specific Land Use

Land Use	Impervious %*	R_v
Urban Open, Grass	9	0.131
Residential, (low density)	21	0.23
Forest	2	0.068
Commercial	68	0.662
Roads	100	0.95

* (NYS Stormwater Management Design Manual, 2003, pages 4-2 and 4-3)

Table 8: Total Existing Annual Phosphorus Load at Design Point 1 and 2 (in pounds)

Land Use Category **	Area (acres)	C (for total phosphorus [TP])	Load (pounds)
Forest	74.7	0.11 mg/1 or ppm	5.13
Residential (low density)	4.5	0.52	4.95
Urban Open, Grass	-	0.11	-
Roads	-	0.43	-
Commercial	-	0.33	-
Total Existing Annual Phosphorus Load at Design Point 1 and 2			**10.08**

** *A Watershed Approach to Urban Runoff (Terrene Institute 1996).*

As previously mentioned, offsite improvements within the East Branch reservoir are proposed as part of the subject project. As seen in Figure 4 of this report, untreated areas immediately adjacent to the Putnam County Highways Facility are proposed to be treated to provide additional levels of phosphorous removals within the reservoir basin.

Table 9: Future Ground Cover Conditions by Subcatchment Areas (in acres)

	---------- Onsite Subcatchments -------- -					--- Offsite Subcatchment ---	
Land Use	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**	**2.0**	**Putnam County Highway Facility (PCHF)**
Grass	9.7	1.1	1.8	1.4	2.0	10.1	1.5
Road	-	-	-	-	-	-	0.3
Commercial	23.0	-	7.4	-	-	-	8.1
Residential	1.5	-	1.7	-	-	-	1.7
Forest	1.3	-	-	-	-	16.0	2.0
Totals	**35.5**	**1.1**	**10.9**	**1.4**	**2.0**	**26.1**	**13.6**

Table 10: Total Future Annual Phosphorus Load (in pounds) by Subcatchment without treatment

------- Onsite Subcatchments -------- --- Offsite Subcatchment--

Land Use	1.1	1.2	1.3	1.4	1.5	2.0	PC-1	PC-2
Grass	1.29	0.15	0.24	0.19	0.26	1.34	0.08	0.26
Road	-	-	-	-	-	-	0.75	1.61
Commercial	46.19	-	14.86	-	-	-	7.83	3.21
Residential	1.65	-	1.87	-	-	-	-	1.10
Forest	0.09	-	-	-	-	1.10	0.06	0.33
Totals	**49.22**	**0.15**	**16.97**	**0.19**	**0.26**	**2.44**	**8.72**	**6.52**

The proposed treatment practices on the site are micropool extended detention ponds, and extended detention wet ponds. The removal efficiencies for these practices are taken from *Stormwater Best Management Practices Design Guide: Volume 1 General Considerations Appendix E*. The removal efficiency for a wet pond is 51% per the design guide. There are variations of the levels of treatment across the site ranging from no treatment to 3 levels of treatment. The efficiency of the practices in series are calculated using the formula:

*** $Es = 1 - [x \bullet (1-E_1)(1-E_2)\ldots]$ where X = 1.25 penalty
*** (See *Fundamentals of Urban Runoff Management: Technical and Institutional Issues* published by the Terrene Institute 1996).

Drainage areas 1.1 will receive 3 levels of treatment in the proposed condition. The treatment practices consist of three wet ponds in series. The efficiency for 3 levels of treatment is:

$$E_s = 1-[(1.25)(1-.51)(1-.51)(1-.51)]$$
$$E_s = 0.85$$

Drainage areas 1.2 and 1.3 will receive 2 levels of treatment in the proposed condition. The treatment practices consist of two wet ponds in series for both areas. The efficiency for 2 levels of treatment is:

$$E_s = 1-[(1.25)(1-.51)(1-.51)]$$
$$E_s = 0.70$$

Drainage area 1.4 and the offsite Putnam County Highway facility site PCHF will both receive 1 level of treatment in the proposed condition. The treatment practice for these areas is one wet pond. The efficiency for 1 level of treatment is:

$$E_s = (1-.51)$$
$$E_s = 0.49$$

While the areas that will receive no levels of treatment are drainage areas (2.0). The future loads are simply a sum of the loadings from the areas.

Table 11: Future Annual Phosphorus Load Remaining at Design Point 1 and 2

Drainage Areas	Untreated Annual Phosphorus Load (lbs)	Levels of Treatment	E_s	Phosphorus Removed (lbs)	Phosphorus Remaining (lbs)
1.1	49.22	3	0.85	41.83	7.39
1.2 & 1.3	17.12	2	0.70	11.98	5.14
1.4	0.19	1	0.49	0.09	0.10
1.5 & 2.0	2.70	-	-	-	2.70
Future Annual Phosphorus Load Remaining at Design Point 1 and 2					**15.33 (lbs)**

Table 12: Future Annual Phosphorus Removed as part of proposed PCHF Improvements

Drainage Area	Untreated Annual Phosphorus Load (lbs)	Levels of Treatment	E_s	Phosphorus Removed (lbs)
PC-1	8.72	1	0.49	4.27
PC-2	6.52	1	0.49	1.60****
Future Annual Phosphorus Removed as part of proposed PCHF Improvements				**9.61 (lbs)**

**** 50% credit taken for Stormwater Basin PC-2 due to 50% funding by Patterson Crossing

Table 13: Annual Phosphorus Loading Summary to the East Branch Reservoir

Total Existing Annual Phosphorus Load at Design Point 1 and 2	**9.71 (lbs)**
Future Annual Phosphorus Load Remaining at Design Point 1 and 2	**15.33 (lbs)**
Future Annual Phosphorus Removed as part of proposed PCHF Improvements	**- 5.87 (lbs)**
Total Future Annual Phosphorus Load to East Branch Reservoir	**9.46 (lbs)**

As shown in the summary above the phosphorus loading analysis performed using the simple method shows a reduction in the phosphorus loading in the proposed condition, benefiting the long-term goals of the TMDL initiative within the New York City Watershed. As seen in the table there is a reduction in the phosphorus loading to the East Branch Reservoir in the post development condition, including the off-site improvements at the Putnam County Highway Facility.

APPENDIX G

Erosion and Sediment Control Plan Review Checklist

EROSION AND SEDIMENT CONTROL
PLAN REVIEW CHECKLIST

Patterson Crossing
NYS Route 311
Towns of Kent and Patterson

I. Construction Drawings

1.	Vicinity Map with scale and north arrow	shown on drawing VM-1
2.	Legend, scales, north arrow on plan view	shown on all plan sheets
3.	Existing and proposed topography shown with contours labeled with spots elevations in critical areas	shown on drawings SP-3.1 to SP-4.4
4.	Scope of the plan noted in the Title Block	shown on all drawings
5.	Limits of clearing and grading shown	shown on drawings SP-3.1 to SP-3.3 as the limits of disturbance line
6.	Existing vegetation delineated,	shown on drawing EX-1
7.	Soil boundaries shown on the plan view	shown on drawings SP-4.1 to SP-4.4
8.	Existing drainage patterns, 100 year floodplain and sub-areas	shown in the SWPPP
9.	Existing and proposed development facilities/ improvements shown	shown on appropriate project drawings
10.	Location of Erosion and Sediment control practices as phased with construction	shown on drawings SP-4.1 to SP-4.4
11.	Phasing plan with 5 acre threshold limits shown	shown on drawing SP-4.1
12.	Stockpile locations, staging areas and access points clearly defined	shown on drawings SP-4.1 to SP-4.4
13.	Street profiles, utility locations, property boundaries and, easement delineations shown	shown on appropriate project drawings

II. Construction Notes & Details

1.	Specific sequence of operations given for each phase	shown on drawings SP-4.1 to SP-4.4
2.	Inspection and maintenance schedule shown for the specific practices	shown on drawing SP-4.4
3.	Design details show all dimensions and installation detail necessary for construction	shown on drawings D-1 to D-4
4.	Implementation schedule for E & S practices is provided with removal criteria stated	stated in construction sequence on drawing SP-4.1
5.	Construction waste management plan incorporated in the notes	stated in E/C notes on drawing SP-4.3
6.	Site Inspections during construction are noted on the drawings and is in accordance with the General Permit for Stormwater Discharges from Construction Activities	shown in the SWPPP

III Erosion & Sediment Control Practices

A. General

1.	Practice meets purpose and design criteria	shown on appropriate project drawings
2.	Standard details and construction notes provided	shown on drawings SP-4.2 to SP-4.4 & D-1 to D-4
3.	Special timing of practice noted if applicable	stated in E/C notes on drawing SP-4.3
4.	Provisions for traffic crossings shown on the drawings where necessary	shown on appropriate project drawings

B. Practices Controlling Runoff

1.	Positive drainage is maintained with contributing drainage area shown	shown in the SWPPP
2.	Flow grades properly stabilized	shown on appropriate project drawings
3.	Adequate outlet or discharge condition stabilized	shown on appropriate project drawings
4.	Necessary dimensions, gradations, calculations, and materials shown	shown on appropriate project drawings

C. Practices Stabilizing Soil

1.	Seeding rates and areas properly shown on the drawings	shown in the SWPPP
2.	Mulch materials and rates specified on the drawings	stated in E/C notes on drawing SP-4.3
3.	Sequencing and timing provisions limit soil exposure to 14 days	stated in E/C notes on drawing SP-4.3
4.	Rolled Erosion Control Products (RECP's) used are specified to location and appropriate weight/tie down	shown on drawings SP-4.2 to SP-4.4 and stated in the Erosion Control Notes on drawing SP-4.3
5.	All soil seed bed preparation and amendments are specified on the drawings or in the specifications	stated in E/C notes on drawing SP-4.3
6.	The seeding dates are specified to cover the entire year for both temporary and permanent seedings	stated in E/C notes on drawing SP-4.3
7.	Maximum created slope is no steeper than 2 foot horizontal to 1 foot vertical with Cut and Fill slopes shown	stated in E/C notes on drawings SP-4.2 to SP-4.4 shown on appropriate project drawings

D. Practices Controlling Sediment

1.	Sediment traps/basins are sized in accordance with criteria	shown in table on drawing D-4
2.	The contributing drainage area is shown on the grading plan	shown in the SWPPP
3.	All scaled dimensions and volumes are shown on the plan	shown on appropriate project plans
4.	Maintenance requirements and clean out elevations established for all sediment control practices (50% capacity)	shown on drawing SP-4.4
5.	All access points of the project are shown to be stabilized	shown on drawings SP-4.1 to SP-4.4
6.	Storm drain inlets adequately protected	shown on drawings SP-4.2 to SP-4.4
7.	Silt fences are shown on the contour lines with no more than one quarter acre per 100 foot drainage to it	shown on drawings SP-4.2 to SP-4.4
8.	Temporary sediment traps being used to locations of future stormwater infiltrations facilities	not applicable

APPENDIX H

Offsite Drainage Improvements Discussion

As discussed in previous sections of this report, an offsite area is proposed to be treated in the proposed condition to provide a total maximum daily load (TMDL) benefit for the receiving reservoir basin. In an effort to reduce the phosphorus loading in the East Branch Reservoir basin, it is proposed to provide offsite stormwater improvements within the reservoir basin. As shown in Figure 5, the offsite area proposed to be treated is the Putnam County Highways Facility (PCHF) and surrounding area along Fair Street in the Town of Patterson. It is proposed to capture and treat each of the PCHF subcatchments in a micropool extended detention pond (designated PC-1 and PC-2) to provide an additional stormwater benefit to the receiving reservoir basin. This approach of treating onsite and offsite stormwater will assure that the development doesn't impede the long-term goals of the TMDL efforts. The proposed TMDL benefit at the PCHF is in close proximity to the subject project, but does not discharge to either of the design points in the East Branch Reservoir basin. The calculations of the benefit for these offsite improvements, shown in Appendix F, are only taken credit for in the additional stormwater quality analysis as requested by the New York State Watershed Inspector General.

The contributing areas to each of the proposed ponds consists of ground cover that can be characterized as a vehicle service and maintenance facility and a public works storage area, which are site classifications considered stormwater "hotspots" per Section 4.9, Table 4.3 of the *New York State Department of Environmental Conservation Stormwater Management Design Manual* (Design Manual). As per the Land Use Selection Matrix, Section 7, Table 7.1 of the Design Manual, micropool extended detention ponds are acceptable practices for stormwater treatment of a "hotspot" area. Therefore the micropool extended detention ponds (PC-1 and PC-2) have been designed to treat the Water Quality Volume (WQ_v) and provide Stream Channel Protection Volume (CP_v) as required in the Design Manual. Additionally, the ponds will be sized to safely capture and discharge the 100-year 24-hour design storm.

The contributing area to pond PC-1 is composed of existing Putnam County Highway Facility (PCHF) located on the east of Fair Street, as shown on Figure 5. The PCHF is comprised of an administrative building, multiple garages for county vehicle maintenance, a salt storage building, and associated parking areas. The stormwater runoff generally flows from southwest to northeast across the site. There are two existing drainage systems currently on the site that collect and convey stormwater runoff to two discharge points. It is proposed to make modifications and additions to the existing collection systems at the PCHF to direct the stormwater runoff from the site to pond PC-1 for treatment.

The contributing area to pond PC-2 is composed of the developed area to the west of Fair Street, including a portion of the Putnam County's office and bus facility, storage areas for the PCHF, a privately owned distribution warehouse, and a single family residence. The stormwater runoff currently flows along the western side of Fair Street in a northerly direction in conveyance system consisting of roadside swales, drainage structures and piping. It is proposed to modify the existing drainage system outfall to direct the stormwater runoff to pond PC-2 for treatment.

The NYSDEC SPDES General Permit GP-02-01 requires that the Water Quality Volume (WQ_v) be treated in order to provide pollutant removal. The WQ_v is directly related to the amount of impervious cover proposed on the project area. The treatment of the stormwater will be accomplished in ponds PC-1 and PC-2. As previously stated PC-1 and PC-2 have been designed as micropool extended detention ponds per the NYSDEC Design Manual. The following equation was used to determine the water quality volume for each of the contributing areas to the aforementioned stormwater ponds:

$$\text{The water quality volume shall be } WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where,

- WQ_v = water quality volume (in acre-feet)
- P = 90% Rainfall Event Number
- R_v = 0.05 + 0.009(I), where I is percent impervious cover
- A = site area in acres

The following table summarizes the water quality volume calculations for each subcatchment discharging to a NYSDEC stormwater practice:

Practice	P (in.)	R_v	A* (ac.)	WQ_v (ac-ft)	WQ_v (cf)
PC-1	1.2	0.53	5.5	0.292	12,697
PC-2		0.23	9.8	0.225	9,818

* Information regarding contributing areas to stormwater ponds is shown in Appendix F

For the micropool extended detention pond the treatment of the water quality volume is related to the storage volume within the permanent pool of the associated treatment practice. Table 6.1 in the NYSDEC Design Manual provides a volume distribution breakdown of each of the pond design variations. The following table summarizes the volume requirements and the volume provided in the proposed wet stormwater ponds:

Pond	NYSDEC Design Practice Designation	Minimum % WQ_v In Permanent Pool	Permanent Pool Storage Volume Provided (cf)	WQ_v (as calculated above) (cf)	% WQ_v Provided in Permanent Pool
PC-1	Micropool Extended Detention Pond	20% min	11,600	12,697	91%
PC-2			11,400	9,818	116%

As shown in the above table, the water quality volume storage requirements set forth in the NYSDEC Design Manual have been met. By meeting the Water Quality Volume requirements through employment of a micropool extended detention pond the water quality objectives of the NYSDEC to treat the water quality volume have been met.

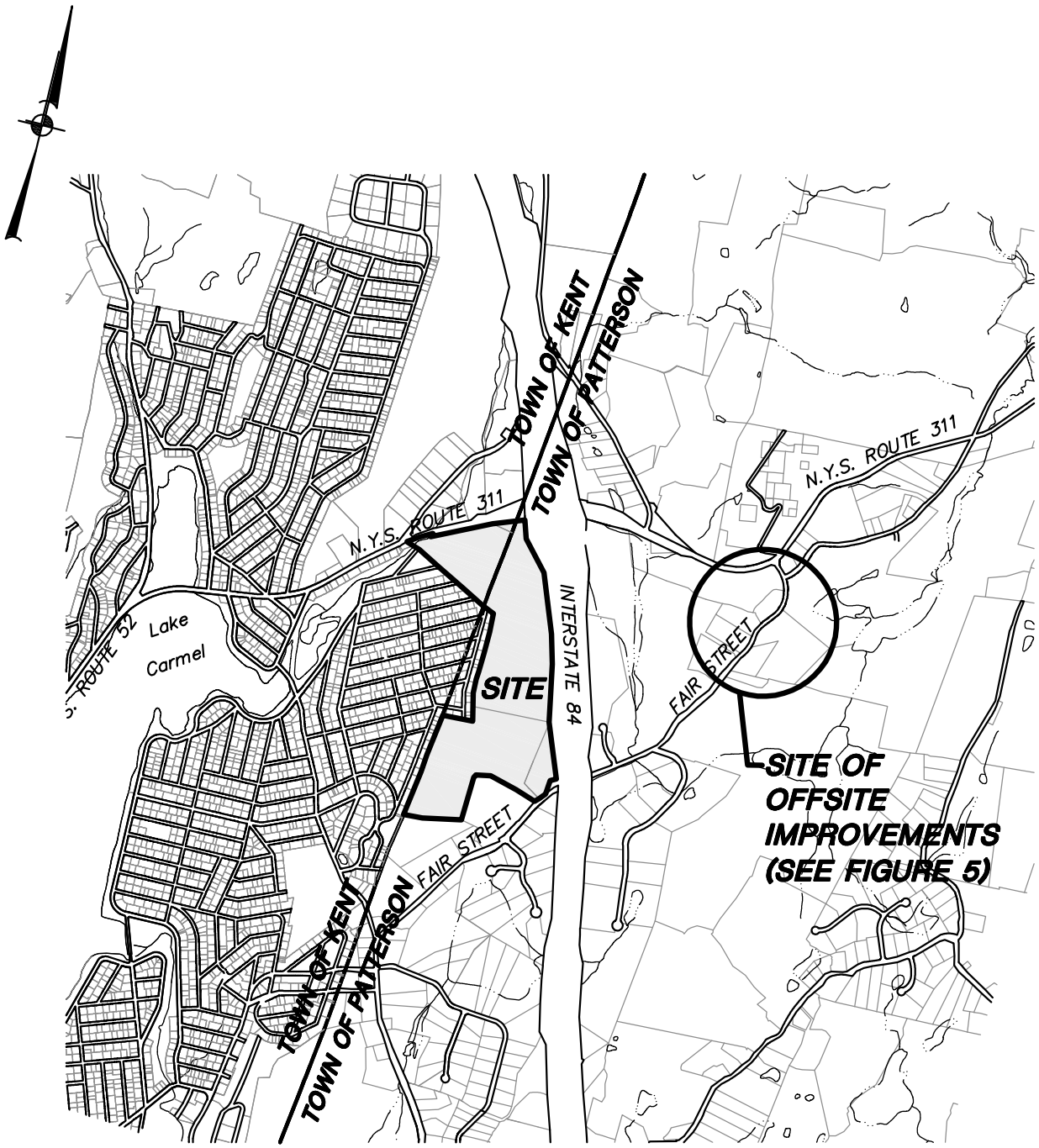
To meet the NYSDEC requirements for Stream Channel Protection (Cp_v) the 24-hour center of mass detention of the 1-year 24-hour design storm has been provided within each of the ponds. The following table summarizes the 1-year 24-hour design storm center of mass detention time for both ponds.

CENTER OF MASS DETENTION TIME (MIN) FOR 1-YEAR, 24 HOUR DESIGN STORM

Pond	Discharge Point	Center of Mass Detention (Hours)
PC-1	PCHF	24.6
PC-2		27.9

As shown in the table above a minimum of 24 hours has been provided within the ponds prior to discharge. By providing 24 hours of detention of the center of mass for the 1-Year, 24-hour design storm the NYSDEC requirements for Stream Channel Protection (Cp_v) have been met.

FIGURES

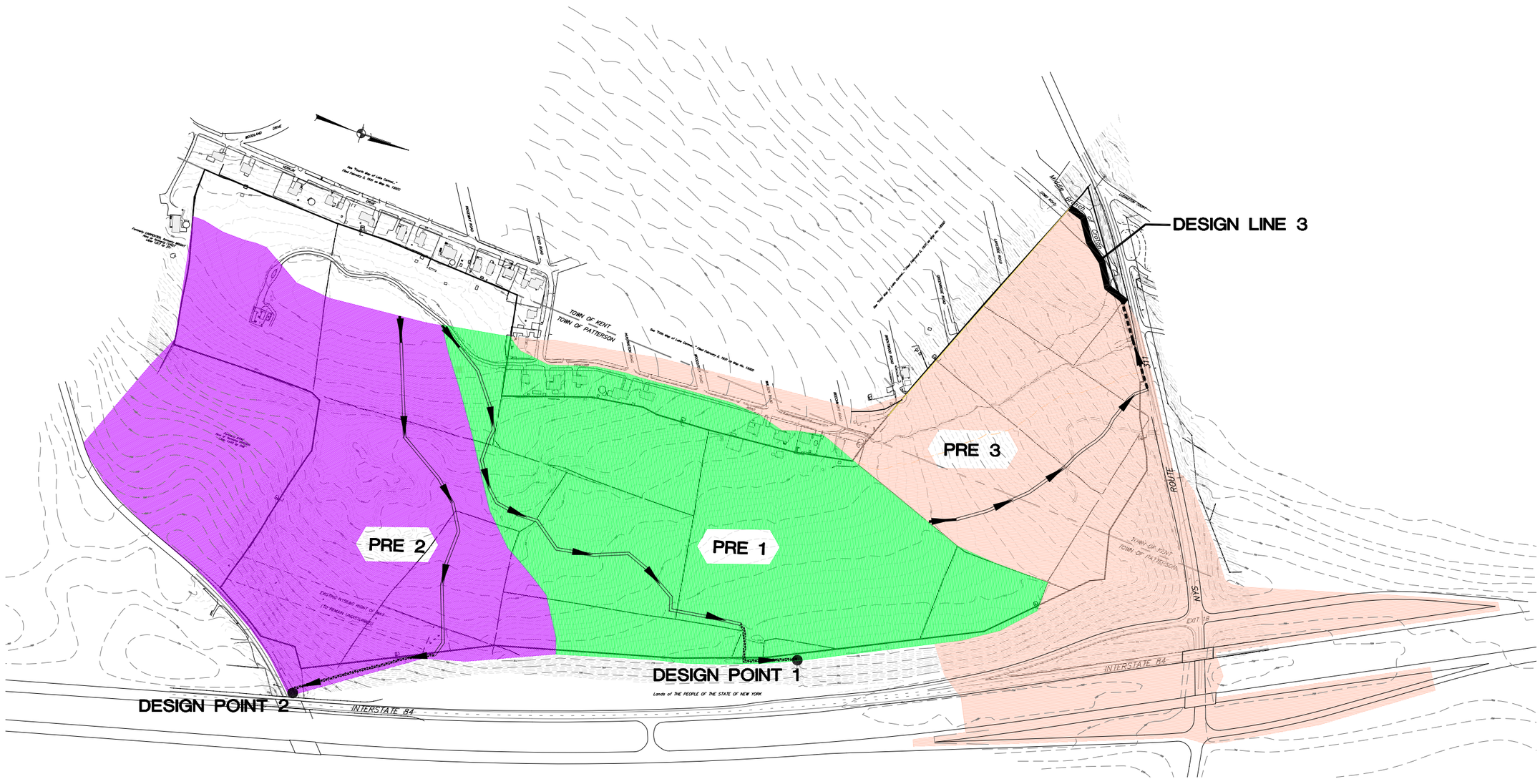


PROJECT: PATTERSON CROSSING N.Y.S. ROUTE 311, TOWN OF KENT & PATTERSON, PUTNAM COUNTY, NEW YORK	INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C. 3 Garrett Place • Carmel, New York 10512 Phone (845) 225-9690 • Fax (845) 225-9717 www.insite-eng.com	DATE: 12-30-07 SCALE: 1' = 2000' PROJECT NO.: 01124.100 FIGURE: 1
DRAWING: LOCATION MAP		

Z:\E\01124100\STORMWATER\FIGURES\FIG-1.DWG, 1/17/2008 3:54:15 PM, ZAC, 1:1

Note:

Drainage boundaries shown hereon are based on field observations / site assessments.



GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

LEGEND

PRE 1	Subcatchment
	Sheet Flow
	Shallow Concentrated Flow
	Channel Flow
	Pipe Flow

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1	10-30-07	GENERAL REVISION	ZMP

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PROJECT:
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DRAWING:
PRE DEVELOPMENT DRAINAGE MAP

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DATE	6-1-07	DRAWN BY	ZMP
SCALE	1" = 150'	CHECKED BY	ZMP

FIGURE NO. 2

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Note:

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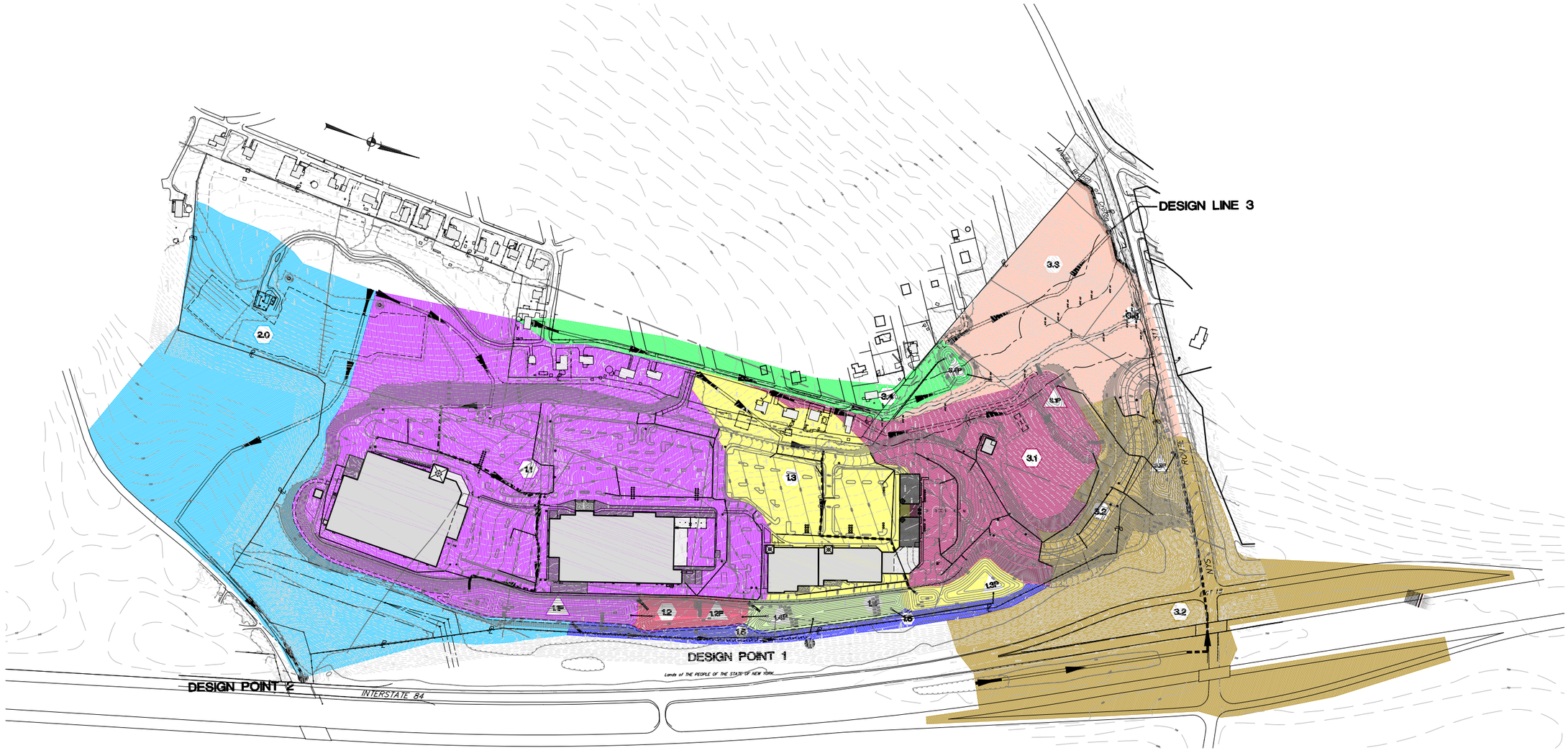

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

LEGEND

1.3	Subcatchment
1.3P	Pond
	Sheet Flow
	Shallow Concentrated Flow
	Channel Flow
	Pipe Flow

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DRAWING:
POST DEVELOPMENT DRAINAGE MAP

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FIGURE NO.
3

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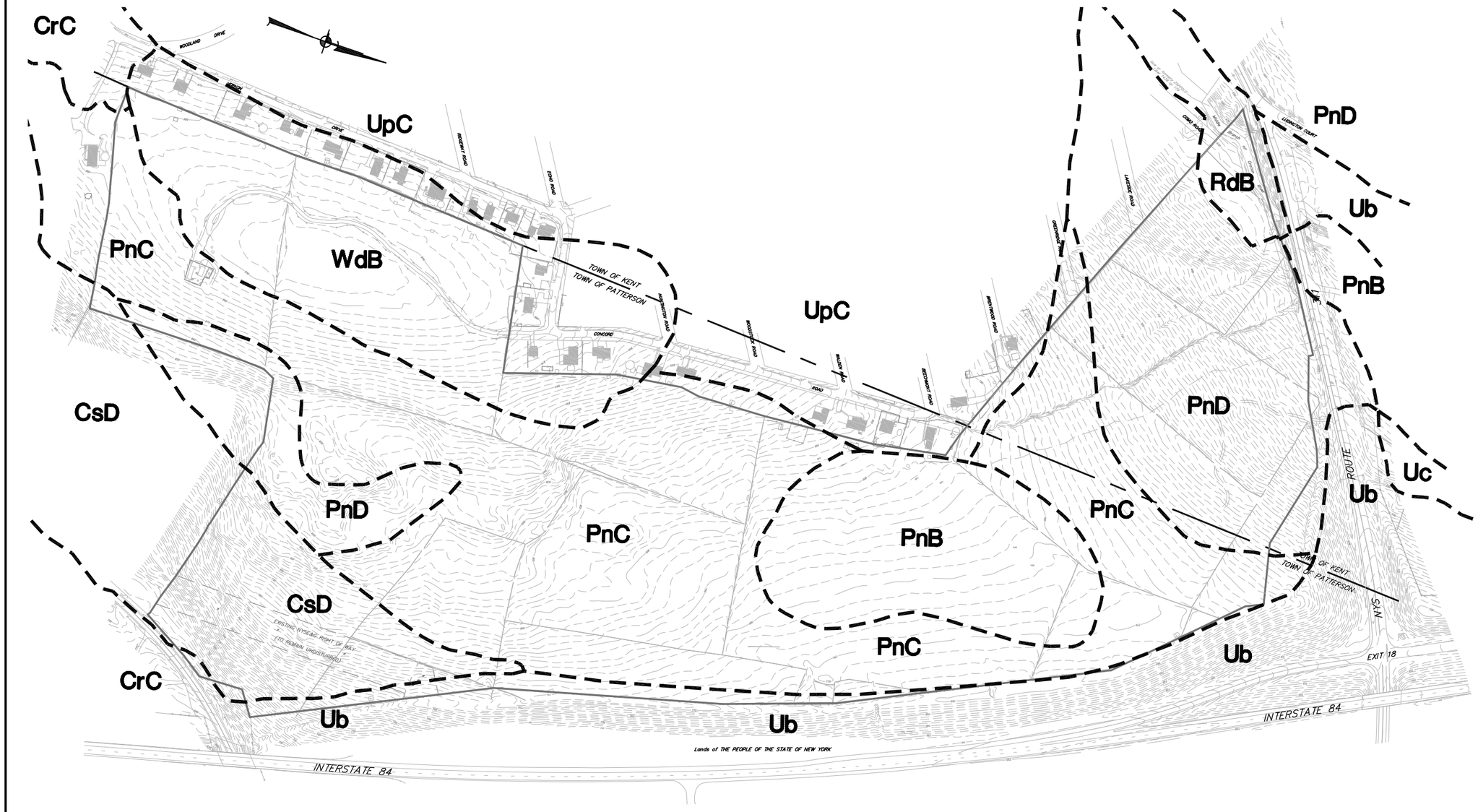

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

SOILS LEGEND

SOILS	DESCRIPTION	HYDROLOGICAL GROUP
CrC	Charlton–Chatfield complex, rolling, very rocky	B
CsD	Chatfield–Charlton complex, hilly, very rocky	B
PnB	Paxton fine sandy loam, 2% to 8% slopes	C
PnC	Paxton fine sandy loam, 8% to 15% slopes	C
PnD	Paxton fine sandy loam, 15% to 25% slopes	C
RdB	Ridgebury loam, 3% to 8% slopes	C
Ub	Udorthents, smoothed	–
Uc	Udorthents, wet substratum	–
UpC	Urban land–Paxton complex, 8% to 15% slopes	C
WdB	Woodbridge loam, 3% to 8% slopes	C

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PROJECT:
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Towns of Patterson & Kent Putnam County, New York

DRAWING:
SOILS MAP

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DATE	6–1–07	DRAWN BY	ZMP
SCALE	1" = 200'	CHECKED BY	ZMP

FIGURE NO. 4

Z:\01\01124\00\STORMWATER\FIGURES\FIG-4.DWG, 1/24/2008 9:28:13 AM, ZAC, 1:1



Note:

Drainage boundaries shown hereon are based on field observations / site assessments.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

NO.	DATE		BY
2	2-4-08	GENERAL REVISION	ZMP
1	10-30-07	GENERAL REVISION	ZMP

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PROJECT:
PATTERSON CROSSING RETAIL CENTER
N.Y.S. ROUTE 311, TOWNS OF PATTERSON & KENT, PUTNAM COUNTY, NEW YORK

DRAWING:
PROPOSED OFFSITE STORMWATER IMPROVEMENTS

PROJECT NO.	01124.100	PROJECT MANAGER	J.J.C.
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FIGURE NO. 5

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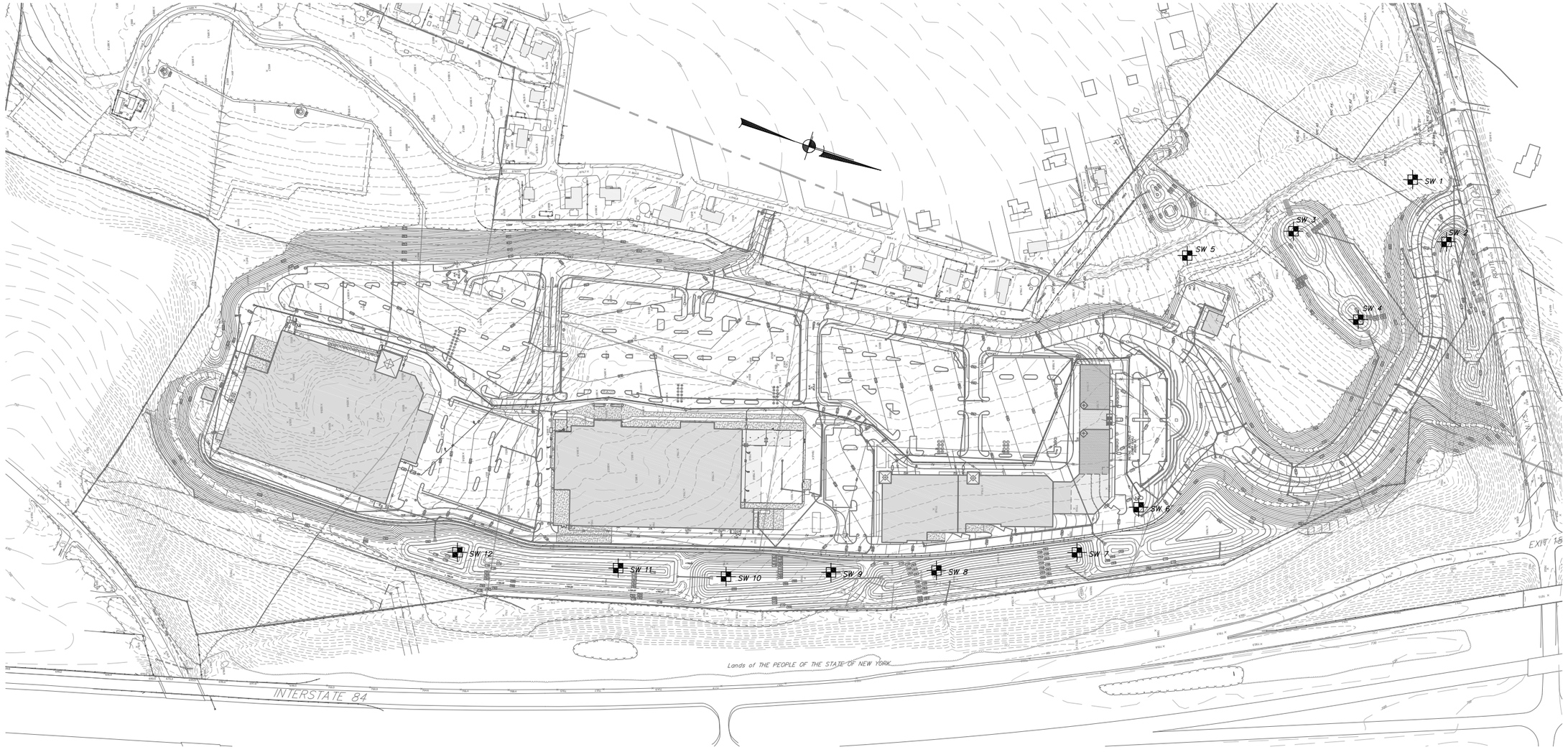
Z:\E\01124100\STORMWATER\FIGURES\FIG-5.DWG, 2/13/2008 9:51:18 AM, ZAC, 1:1



WITNESSED STORMWATER DEEP TEST DATA

TESTING DATE (6-20-05)

SW 1: 0"-12" TOPSOIL
12"-36" MODERATELY COMPACT BROWN SANDY LOAM
36"-150" COMPACT FINE BROWN SANDY LOAM
NO ROCK, GROUNDWATER SEEP @ 96"

SW 2: 0"-12" TOPSOIL
12"-36" MODERATELY COMPACT BROWN SANDY LOAM
36"-174"+ COMPACT FINE BROWN SANDY LOAM
NO ROCK, NO WATER

SW 3: 0"-10" TOPSOIL
10"-30" MODERATELY COMPACT ORANGE BROWN SANDY LOAM
30"-120"+ COMPACT FINE BROWN SANDY LOAM
NO ROCK, GROUNDWATER SEEP @ 84"

SW 4: 0"-10" TOPSOIL
10"-30" MODERATELY COMPACT ORANGE BROWN SANDY LOAM
30"-126"+ COMPACT FINE BROWN SANDY LOAM
NO ROCK, NO GROUNDWATER

SW 5: 0"-10" TOPSOIL
10"-30" MODERATELY COMPACT ORANGE BROWN SANDY LOAM
30"-108"+ COMPACT FINE SANDY LOAM
NO ROCK, NO GROUNDWATER

SW 6: 0"-12" TOPSOIL
12"-44" MODERATELY COMPACT BROWN SANDY LOAM
44"-132"+ COMPACT FINE BROWN SANDY LOAM
NO ROCK, NO GROUNDWATER

SW 7: 0"-12" TOPSOIL
12"-44" MODERATELY COMPACT BROWN SANDY LOAM
44"-132"+ COMPACT FINE BROWN SANDY LOAM
NO ROCK, GROUNDWATER SEEP @ 129"

SW 8: 0"-12" TOPSOIL
12"-38" MODERATELY COMPACT LIGHT BROWN SANDY LOAM
38"-132"+ COMPACT BROWN SANDY LOAM
NO ROCK, NO GROUNDWATER

SW 9: 0"-12" TOPSOIL
12"-40" COMPACT BROWN SANDY LOAM
40"-132"+ COMPACT FINE BROWN SANDY LOAM
NO ROCK, NO GROUNDWATER

SW 10: 0"-12" TOPSOIL
12"-66" GRAVELY BROWN SANDY LOAM
66"-132"+ MODERATELY COMPACT GRAVELY BROWN SANDY LOAM WITH COBBLES
NO ROCK, GROUNDWATER SEEP @ 65"

SW 11: 0"-12" TOPSOIL
12"-66" MODERATELY COMPACT BROWN SANDY LOAM
66"-144"+ COMPACT FINE BROWN SANDY LOAM
NO ROCK, NO GROUNDWATER

SW 12: 0"-12" TOPSOIL
12"-48" BROWN SANDY LOAM
48"-156"+ FINE BROWN SANDY LOAM, LOOSE
NO ROCK, NO GROUNDWATER

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

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PROJECT:
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Towns of Patterson & Kent Putnam County, New York

DRAWING:
STORMWATER TESTING PLAN

PROJECT NO.	01124.100	PROJECT MANAGER	JJC	FIGURE NO.
DATE	2-4-08	DRAWN BY	ZMP	6
SCALE	1" = 100'	CHECKED BY	ZMP	

Appendix G

WATER SYSTEM REPORT

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LANDSCAPE ARCHITECTURE, P.C.

WATER SYSTEM REPORT

For

PATTERSON CROSSING
Town of Patterson and Town of Kent, New York

December 21, 2007

Prepared by:
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place
Carmel, New York 10512

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1.0 INTRODUCTION

The subject project is located on a 90.5± acre parcel located in both the Town of Patterson and Town of Kent adjacent to Interstate 84 and New York State Route 311. The majority of the property is located in the Town of Patterson. The property is designated as Tax Map Parcel No. 22.-3-1, 32.-2-2, 33.-2-23 and 34.-2-3 in the Town of Patterson and 22.-2-48 in the Town of Kent. The parcel is zoned as I-(Industrial), and R-4-(Residential) in the Town of Patterson and C-(Commercial) in the Town of Kent. The subject parcel consists of woods and brush throughout the majority of the property. The only development on the subject property is the existing telecommunications facility located in the southeast portion of the property. The subject parcel is proposed to be developed as a retail center. The retail center will consist of four (4) buildings with multiple users and associated parking for each. Access to the site will be provided by a proposed access road off of New York State Route 311. The water supply for the proposed project will be provided by two drilled wells. Please see report titled "Patterson Crossing Water Supply Report" prepared by Tim Miller Associates, Inc. for details associated with the development of the water source. This report discusses the general components of the water system for the project.

2.0 DESIGN FLOW

The project is proposed to be comprised of dry retail with the exception of the wholesale warehouse store, coffee shop, and a sandwich shop. Water use and wastewater discharge will therefore be primarily associated with restroom usage. The use of water saving plumbing fixtures, as required by the building code, would further limit water usage at the site. Please note that irrigation water will be supplied by a separate system that will collect and store roof runoff for that purpose.

The reference design standards for water and wastewater flows provide general design flows covering a broad range of usage categories. The New York State Department of Environmental Conservation (NYSDEC) publication "Design Standards for Wastewater Treatment Works, 1988" provides two alternatives for establishing design flows: hydraulic loading rates tables or water usage data. In either case a daily design flow rate must be calculated. The daily design flow rate is a conservatively high estimate of daily flow used by the engineer in the design of the water and sewer infrastructure.

In order to establish design flows, it is acceptable to use actual flows multiplied by a factor of safety of 1.5, or design flows based on published hydraulic loading rates. The design flows for the subject project have been calculated based on a combination of typical actual corporate user flow data (multiplied by the factor of safety) and the applicable hydraulic loading rate. It is commonly accepted by both the PCDOH and the New York City Department of Environmental Protection (NYCDEP) to apply a factor of safety of 1.5 to actual flows for use as design flows. Note that the NYSDEC publication "Design Standards for Wastewater Treatment Works, 1988" does not require a factor of safety. For the purposes of this report the project's two water systems will be analyzed separately in the following sections.

2.1 SOUTHERN WATER SYSTEM

The following flow analysis provides water consumption data for the groups of uses proposed for the southern water system of the Patterson Crossing project. The data presented herein is based on actual measured water usage within the Tri-State region, which will be utilized to estimate representative wastewater usage for the centralized system serving the main portion of the subject project. This does not include the 2,000 square foot building located in the Town of Kent which will serviced by its own well and septic system. Although the building in the Town of Kent is currently proposed to have it's own well and SSTS, the building in the Town of Kent could also be connected to the main project (southern) SSTS area if this option is determined to be desirable. It should also be noted that conversely, some of the main project water and sewer systems could be connected to the northern water & sewer systems. The intention of this evaluation is to support the water design flows utilized for the subject project water system based on actual water consumption of similar uses, or published unit flow estimates. For the purposes of this evaluation, the main portion of the project will be broken into five distinct components as follows:

1. Wholesale Warehouse.
2. Home Improvement Center.
3. Dry Retail Uses.
4. Coffee Shop and Sandwich Shop.

5. Management Space / Office Space / Meeting Rooms.

Insite contacted municipal and private water suppliers to obtain water flow data from similar uses. Each section which follows includes the information that was made available. The user names listed are similar category retailers, and not necessarily future occupants of Patterson Crossing.

2.1.1 Wholesale Warehouse

The subject project proposes the development of a 145,000 sf wholesale warehouse. It is recognized that wholesale warehouses are unique retailers that store products in aisles of the store. The product storage utilizes a large portion of floor area. Many items for sale are bulky and use a significant amount of floor area within the building, particularly when compared to more traditional retail uses. Very specific information is available directly from Costco's corporate office that has provided the developer with the following information:

- Anticipated actual daily water usage (and related wastewater usage) 3,700 gallons per day.
- Desired design flow (with factor safety of 1.5) 5,550 gallons per day.

Similar users in the wholesale warehouse category include BJ's, and Sam's. Based on our research we found the following which support the design flow for the Wholesale Warehouse:

Store	Location	Time Period	Avg. Daily Flow (gpd)
BJ's	Wappingers Falls	1/07 to 11/07	1,780
Sam's	Middletown	3/06 to 10/07	3,500

2.1.2 Home Improvement Center

A Home Improvement Center is also a unique retailer that warehouses products in aisles of the store. The warehousing utilizes a large portion of the building floor, and many materials offered for sale are bulky items and use up a significant amount of floor area, particularly when compared to more traditional retail uses. The Home Improvement Center contains an exterior garden center that sells live plant materials on a seasonal basis. As part of the normal store operations, these live plant materials are irrigated to maintain plant health. A review of water records indicates that maximum garden center irrigation usually occurs from spring through the fall. In order to estimate wastewater flows, it is necessary to exclude irrigation water usage from total water usage. This can be achieved by summarizing winter water usage which would include little or no irrigation usage. Similar users in the home improvement category include Lowes and Home Depot. Based on our research we found the following:

Store	Location	Time Period	Winter Avg. Daily Flow (gpd)	Full Year Avg. Daily Flow (gpd)
Lowes	Newburgh	7/06 to 9/07	1,333	3,000
Home Depot	Newburgh	7/06 to 9/07	1,039	2,118
Home Depot	Middletown	3/06 to 10/07	1,255	2,861
Home Depot	9 Location in NJ	2001 to 2003	1,403	2,548

Full year water usage averages 2,600 gallons per day, while winter usage (assuming no irrigation usage, and therefore representing true wastewater flows) is approximated at 1,400 gallons per day. Note that there are some Large Dry Retail Stores (such as Kohls or Gander Mountain as discussed in section 2.1.3) that could replace the Home Improvement Center user, as long as the water usage is within the flows allocated for the Home Improvement Center, or other changes are made to the tenant mix as long as the users water flow is within the total water flow allocated for the project.

The non-winter average daily flow is approximated at 4,000 gallons per day, which will be used for domestic water flow, a large part of which is used for garden center irrigation and general garden center use. It should be noted that this specific project will include a roof runoff reclamation system, which will capture and store roof top runoff, which will then be used for garden center irrigation. This fact was conservatively not included in this flow analysis.

2.1.3 Dry Retail Uses

Dry Retailers include retail stores of varying sizes that only utilize water for restroom and employee convenience (lunch room, lounge) purposes. These would exclude supermarkets, restaurants, fast food establishments, and other retail establishments that would utilize water for a purpose other than restroom use. Below is a summary of regional water consumption data gathered for a varying sizes of retail establishments:

Small Dry Retail Stores (less than 10,000 sf)

Store	Approx. Building Area (sf)	Location	Time Period	Avg. Daily Flow (gpd)	Avg. Daily Flow per Bldg. Area (gpd/sf)
Village Paint	2,300	Carmel	7/07 to 9/07	18	0.0078
Radio Shack	2,300	Carmel	7/07 to 9/07	18	0.0078
Rockaway Bedding	4,500	Carmel	7/07 to 9/07	24	0.0053
Pier 1 Imports	9,500	Middletown	4/06 to 9/07	52	0.0055

Mean 0.0066 gpd/sf

Medium Dry Retail Stores (between 10,000 sf and 40,000 sf)

Store	Approx. Building Area (sf)	Location	Time Period	Avg. Daily Flow (gpd)	Avg. Daily Flow per Bldg. Area (gpd/sf)
CVS	10,000	Pawling	1/06 to 9/07	84	0.0084
Rite Aid	10,000	Carmel	7/07 to 9/07	303	0.0303
Payhalf	13,000	Wappingers Falls	1/07 to 11/07	17	0.0013
Michael's	25,000	Newburgh	7/06 to 9/07	176	0.0070
AC Moore	26,000	Wappingers Falls	1/07 to 11/07	449	0.0173
AC Moore	30,000	Middletown	4/06 to 9/07	342	0.0114
Linens N Things	32,000	Middletown	4/06 to 9/07	172	0.0054
Bed Bath & Beyond	35,000	Newburgh	1/07 to 9/07	148	0.0042
Toys R Us	38,000	Middletown	4/06 to 9/07	456	0.0120
Best Buy	45,000	Middletown	4/06 to 9/07	532	0.0118

Mean 0.0109 gpd/sf

Large Dry Retail Stores (greater than 40,000 S.F.)

Store	Approx. Building Area (sf)	Location	Time Period	Avg. Daily Flow (gpd)	Avg. Daily Flow per Bldg. Area (gpd/sf)
Dick's Sporting Goods	45,000	Middletown	4/06 to 9/07	227	0.0050
Kohls	75,000	Middletown	4/06 to 9/07	932	0.0124
Kohls	75,000	Newburgh	10/06 to 9/07	596	0.0079
Gander Mountain	123,000	Middletown	4/06 to 9/07	976	0.0079

Mean 0.0083 gpd/sf

As can be seen from the above data, the lowest water usage for average daily flow per building area is with the small dry retail stores. This is primarily due to the fact that the smaller stores do not have customer bathrooms and have very few employees and low volume of customer usage. The next highest average daily flow per building area is for the large dry retail stores. Although the stores do have customer restrooms, a larger number of employees, and a more vibrant customer base, their water usage is spread over a large building area which lessens the average daily flow per building area. The highest average daily flow per building area lies with the medium dry retail stores. This group of stores typically does include a customer restroom, a moderate number of employees and a vibrant customer base. With the limited building square footage, the average daily flow per building area tends to be slightly higher than the other two categories. The mean for this category, which is the highest of the three categories, is 0.0109 gallons per day per square foot of building area. It is proposed to utilize this highest average daily flow per building area and round it to a value of 0.011 gallons per day per square foot.

2.1.4 Coffee Shop and Sandwich Shop

It is envisioned the project will have one coffee shop and one sandwich shop. It is anticipated that the Coffee Shop use would be similar to that of Dunkin Donuts or Starbucks, and would occupy approximately 2,500 square feet and include seating for approximately 30 customers. This use provides light snacks and beverages and would utilize water and generate wastewater primarily from restroom use and light food preparation.

Based on actual water usages provided by the owner of Dunkin Donut stores located in Putnam and Fairfield Counties, their upper average daily water usage is 650 gpd. The daily water taken off of the premises (i.e. coffee, soft drinks, etc.) ranges from 100 to 300 gpd. Assuming an average of 200 gpd is taken off site, the coffee shop total water usage is 450 gpd.

It is anticipated that the sandwich shop use would be similar to that of Quizno's or Subway, and would occupy approximately 2,000 square feet and include seating for approximately 20 customers. This use provides take-out sandwiches, snacks and beverages that would utilize water and generate wastewater from restroom use and light food preparation. Low water use is achieved by utilizing paper products (no washing of customers dishes), and most of the food is sold as take-out (eaten off site). Based on the size and type of proposed sandwich shop use, the sandwich shop total water usage is estimated at 400 gpd. The total water usage for the coffee shop and sandwich shop is 450 gpd + 400 gpd = 850 gpd.

2.1.5 Management Space / Office Space / Meeting Rooms

It is anticipated that the management office will be staffed by up to six employees at certain times of the year for management, security and maintenance. Based on the NYSDEC's design flow of 12 gpd/employee, the management office would require a design flow of 72 gallons per day. The meeting rooms are anticipated to have a maximum occupancy of 40 people. Based on a unit design flow of 3 gpd/person, the meeting rooms would require a design flow of 120 gallons per day. It is proposed to utilize a daily design flow of 192 gallons per day for the management space, office space and meeting rooms. Note that this flow is conservative, since the meeting rooms could only be used once a week.

2.1.6 Southern SSTS Area Domestic Water Design Flow Summary

Based on the data collected and summarized above, the following project water design flow is established utilizing actual flow data and a factor of safety of 1.5:

Wholesale Warehouse	3,700 gpd x 1.5 =	5,550 gpd
Home Improvement Center	4,000 gpd x 1.5 =	6,000 gpd
Dry Retail	107,840sf x 0.011 gpd/sf x 1.5 =	1,779 gpd
Coffee Shop and Sandwich Shop	850 gpd x 1.5 =	1,275 gpd
Management Space / Office Space / Meeting Rooms =		192 gpd
	Total Domestic Water Flow	14,788 gpd

It is proposed to utilize a main project domestic water design flow of 15,000 gallons per day.

Recognizing the fact that the project will be serviced by a subsurface sewage treatment system (SSTS) with an engineered available capacity, the main portion of the project wastewater flows will be limited to the 11,000 gpd design flow. Future retail users must have wastewater flows which fit into the flow projections for the project. In order to assure the project wastewater design flow is not exceeded the applicant would agree to appropriate controls to assure each user's wastewater flows fit the project's design flows. One such control would require each specific user present the Town Building Department with a wastewater design flow at the time they apply for their building permit, or with any change in occupancy. This will allow for the monitoring of design flow to assure that all users wastewater generation falls within the system design capacity. It should be noted that actual water and wastewater flow metering/monitoring will be required as part of the water and sewer permitting with the PCDOH, NYCDEP and NYSDEC. This metering/monitoring will provide an assurance that the actual project flows do not exceed the system design capacity.

2.1.7 References

- Home Depot, 9 locations in NJ flow data from report entitled "Water Consumption Study for Home Depot" prepared by Menlo Engineering Associates, Inc. dated June 26, 2003.
- Wappingers Falls flow data provided by Severn Trent Services, Inc. for the Alpine Commons site.
- Carmel flow data provided by Town of Carmel Engineering Department for Carmel Water District #2.
- Pawling flow data provided by Pawling Joint Sewer Commission.

- Middletown flow data provided by Town of Wallkill Water Department.
- Newburgh flow data provided by Town of Newburgh.

2.2 NORTHERN WATER SYSTEM

There is a 2,000 sf building proposed on the northern portion of the site located in the Town of Kent. The building is proposed to be supported by its own well and SSTS. The intended use of this building is currently unknown, although a conservative water usage design flow of 400 gpd has been estimated for the building. If this building were to be constructed as dry retail use, the water usage design flows would be minimal and much less than 400 gpd. Due to the ample area to construct the northern SSTS a design flow of 400 gpd has been chosen to allow for flexibility of use in this location. It shall be noted that the currently proposed option of providing a stand-alone well and SSTS for the building in the Town of Kent was chosen as the most appropriate and efficient design. The building in the Town of Kent could also be connected to the main project water and sewer systems (southern SSTS area) if that option is determined to be desirable. It should also be noted that conversely, some of the main project water and sewer systems could be connected to the northern water & sewer systems.

3.0 WATER SYSTEM DESCRIPTION

3.1 SOUTHERN WATER SYSTEM

3.1.1 Water Source

The source water for the southern portion of the project will be provided by two drilled bedrock wells (see report titled “Patterson Crossing Water Supply Report” prepared by Tim Miller Associates, Inc. for details). These wells have been drilled and can provide the required quantity and quality of water necessary for the project. Both wells were pump tested for 72 hours at a rate of 22 gpm each (total yield of both wells is 44 gpm), which is approximately four times higher than the project demand of 10.4 gpm (15,000 gpd). Note that eight nearby wells were monitored during the pump test, and there was no discernable impact on any of the monitored wells. Meters will be installed to record total usage from each supply well. The two supply wells will have submersible pumps that will pump the water to a treatment/control building.

3.1.2 Treatment System/Control Building

A control/treatment building is proposed for the majority of the project in the southeastern portion of the site. The discharge from the two supply wells will be piped to this building. The building will contain meters, raw water sampling spigots, and chlorinator equipment for each well source. At this time no other treatment is proposed. Adjacent to the control/treatment building will be a vented potable water storage tank to provide a minimum of 15 minutes of chlorine contact time at peak design flow, supplemental storage to meet the peak flow requirements, and cycling of the well pumps. Two booster pumps will be located in the control building to provide pressure for the potable distribution system. A hydropnuematic tank will be installed adjacent to the control building to cycle the potable water system booster pumps. A fire pump will also be installed in the control building to supply the fire protection distribution system. A separate fire protection water storage tank will be installed adjacent to the control building to provide water for the fire pump. The fire pump will provide the minimum fire flow of 2,250 gpm. An emergency generator will be located in or adjacent to the control building to provide emergency power for the fire pump.

3.1.3 Storage Facilities

Three water storage tanks are proposed for the southern portion of the project to provide both potable and fire protection water storage. A 10,000 gallon vented potable water storage tank is proposed to provide chlorine contact, supplemental storage during peak flows, and cycling of the well supply pumps. A 2,000 gallon hydropnuematic tank will be utilized to cycle the potable water system booster pumps. A 270,000 gallon vented storage tank or tanks will be utilized for fire protection. This tank will be filled from the potable system with an air gap or appropriate backflow prevention device.

3.1.4 Distribution System

Two separate distribution systems are proposed for the southern portion of the project. One distribution system will provide potable water and the other will provide fire protection. The potable system will be pressurized by booster pumps that will deliver water to the four buildings and multiple users. The potable water distribution system will be 4" PVC Class 200 with isolation valves. The fire protection system will be pressurized by a fire pump. The fire protection distribution system will consist of a 12" PVC Class 200 main with fire hydrants as required by the corporate users and/or local agency having jurisdiction.

3.2 NORTHERN WATER SYSTEM

The northern portion of the site including the proposed building in the Town of Kent will be provided with its own individual drilled well. A water meter will be provided in the building to record total water usage.

Appendix H

WASTEWATER SYSTEM REPORT

INSITE
ENGINEERING, SURVEYING &
LANDSCAPE ARCHITECTURE, P.C.

WASTEWATER REPORT

For

PATTERSON CROSSING
Town of Patterson and Town of Kent, New York

December 21, 2007

Prepared by:
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place
Carmel, New York 10512

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Appendix A Southern SSTS Area Field Test Results

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Figure 1 Southern SSTS Area Field Test Locations

Figure 2 Northern SSTS Area Field Test Locations

1.0 INTRODUCTION

The subject project is located on a 90.5± acre parcel located in both the Town of Patterson and Town of Kent adjacent to Interstate 84 and New York State Route 311. The majority of the property is located in the Town of Patterson. The property is designated as Tax Map Parcel No. 22.-3-1, 32.-2-2, 33.-2-23 and 34.-2-3 in the Town of Patterson and 22.-2-48 in the Town of Kent. The parcel is zoned as I-(Industrial), and R-4-(Residential) in the Town of Patterson and C-(Commercial) in the Town of Kent. The subject parcel consists of woods and brush throughout the majority of the property. The only development on the subject property is the existing telecommunications facility located in the southeast portion of the property. The subject parcel is proposed to be developed as a retail center. The retail center will consist of four (4) buildings with multiple users and associated parking for each. Access to the site will be provided by a proposed access drive off of New York State Route 311. Water will be supplied to the site by drilled wells that will serve as a public water supply for the project. Wastewater will be disposed of with subsurface sewage treatment systems (SSTSs) servicing the entire project. This report is prepared to address the wastewater systems only.

The wastewater systems will be designed in accordance with all applicable codes and regulations, including the Putnam County Department of Health's (PCDOH) *Bulletin CS-31, Program Review and Policies, Sewage Treatment and Water Supply Facilities for Commercial and Multifamily Residential Projects,* the New York State Department of Environmental Conservation's (NYSDEC)'s 1988 *Design Standards for Wastewater Treatment Works - Intermediate Sized Sewerage Facilities,* and the 2004 *Recommended Standards for Wastewater Facilities* (a.k.a. Ten-State Standards).

2.0 DESIGN FLOW

The project is proposed to be comprised of dry retail with the exception of the wholesale warehouse store, the coffee shop, and a sandwich shop. Water use and wastewater discharge will therefore be primarily associated with restroom usage. The use of water saving plumbing fixtures, as required by the building code, would further limit water usage at the site. Please note that irrigation water will be supplied by a separate system that will collect and store roof runoff for that purpose.

The reference design standards for water and wastewater flows provide general design flows covering a broad range of usage categories. The New York State Department of Environmental Conservation (NYSDEC) publication "Design Standards for Wastewater Treatment Works, 1988" provides two alternatives for establishing design flows: hydraulic loading rates tables or water usage data. In either case a daily design flow rate must be calculated. The daily design flow rate is a conservatively high estimate of daily flow used by the engineer in the design of the water and sewer infrastructure.

In order to establish design flows, it is acceptable to use actual flows multiplied by a factor of safety of 1.5, or design flows based on published hydraulic loading rates. The design flows for the subject project have been calculated based on a combination of typical actual corporate user flow data (multiplied by the factor of safety) and the applicable hydraulic loading rate. It is commonly accepted by both the PCDOH and the New York City Department of Environmental Protection (NYCDEP) to apply a factor of safety of 1.5 to actual flows for use as design flows. Note that the NYSDEC publication "Design Standards for Wastewater Treatment Works, 1988" does not require a factor of safety. For the purposes of this report the project's two SSTSs will be analyzed separately in the following sections.

2.1 SOUTHERN SSTS AREA

The following flow analysis provides water consumption data for the groups of uses proposed for the southern SSTS area of the Patterson Crossing project. The data presented herein is based on actual measured water usage within the Tri-State region, which will be utilized to estimate representative wastewater usage for the centralized system serving the main portion of the subject project. This does not include the 2,000 square foot building located in the Town of Kent which will serviced by its own well and septic system. Although the building in the Town of Kent is currently proposed to have it's own well and SSTS, the building in the Town of Kent could also be connected to the main project (southern) SSTS area if this option is determined to be desirable. It should also be noted that conversely, some of the main project water and sewer systems could be connected to the northern water & sewer systems. The intention of this evaluation is to support the wastewater design flows utilized for the subject project wastewater system based on actual water consumption of similar uses, or published unit flow estimates. For the purposes of this evaluation, the main portion of the project will be broken into five distinct components as follows:

1. Wholesale Warehouse.
2. Home Improvement Center.
3. Dry Retail Uses.
4. Coffee Shop and Sandwich Shop.
5. Management Space / Office Space / Meeting Rooms.

Insite contacted municipal and private water suppliers to obtain water flow data from similar uses. Each section which follows includes the information that was made available. The user names listed are similar category retailers, and not necessarily future occupants of Patterson Crossing.

2.1.1 Wholesale Warehouse

The subject project proposes the development of a 145,000 sf wholesale warehouse. It is recognized that wholesale warehouses are unique retailers that store products in aisles of the store. The product storage utilizes a large portion of floor area. Many items for sale are bulky and use a significant amount of floor area within the building, particularly when compared to more traditional retail uses. Very specific information is available directly from Costco's corporate office that has provided the developer with the following information:

- Anticipated actual daily water usage (and related wastewater usage) 3,700 gallons per day.
- Desired design flow (with factor safety of 1.5) 5,550 gallons per day.

Similar users in the wholesale warehouse category include BJ's, and Sam's. Based on our research we found the following which support the design flow for the Wholesale Warehouse:

Store	Location	Time Period	Avg. Daily Flow (gpd)
BJ's	Wappingers Falls	1/07 to 11/07	1,780
Sam's	Middletown	3/06 to 10/07	3,500

2.1.2 Home Improvement Center

A Home Improvement Center is also a unique retailer that warehouses products in aisles of the store. The warehousing utilizes a large portion of the building floor, and many materials offered for sale are bulky items and use up a significant amount of floor area, particularly when compared to more traditional retail uses. The Home Improvement Center contains an exterior garden center that sells live plant materials on a seasonal basis. As part of the normal store operations, these live plant materials are irrigated to maintain plant health. A review of water records indicates that maximum garden center irrigation usually occurs from spring through the fall. In order to estimate wastewater flows, it is necessary to exclude irrigation water usage from total water usage. This can be achieved by summarizing winter water usage which would include little or no irrigation usage. Similar users in the home improvement category include Lowes and Home Depot. Based on our research we found the following:

Store	Location	Time Period	Winter Avg. Daily Flow (gpd)	Full Year Avg. Daily Flow (gpd)
Lowes	Newburgh	7/06 to 9/07	1,333	3,000
Home Depot	Newburgh	7/06 to 9/07	1,039	2,118
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Home Depot	9 Location in NJ	2001 to 2003	1,403	2,548

Full year water usage averages 2,600 gallons per day, while winter usage (assuming no irrigation usage, and therefore representing true wastewater flows) is approximated at 1,400 gallons per day. Note that there are some Large Dry Retail Stores (such as Kohl's or Gander Mountain as discussed in section 2.1.3) that could be replace the Home Improvement Center user, as long as the water usage is

within the flows allocated for the Home Improvement Center, or other changes are made to the tenant mix as long as the users wastewater flow is within the total wastewater flow allocated for the project.

The non-winter average daily flow is approximated at 4,000 gallons per day, which will be used for domestic water flow, a large part of which is used for garden center irrigation and general garden center use. It should be noted that this specific project would include a roof runoff reclamation system, which will capture and store roof top runoff, which will then be used for garden center irrigation.

2.1.3 Dry Retail Uses

Dry Retailers include retail stores of varying sizes that only utilize water for restroom and employee convenience (lunch room, lounge) purposes. These would exclude supermarkets, restaurants, fast food establishments, and other retail establishments that would utilize water for a purpose other than restroom use. Below is a summary of regional water consumption data gathered for a varying sizes of retail establishments:

Small Dry Retail Stores (less than 10,000 sf)

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Radio Shack	2,300	Carmel	7/07 to 9/07	18	0.0078
Rockaway Bedding	4,500	Carmel	7/07 to 9/07	24	0.0053
Pier 1 Imports	9,500	Middletown	4/06 to 9/07	52	0.0055
				Mean	**0.0066 gpd/sf**

Medium Dry Retail Stores (between 10,000 sf and 40,000 sf)

Store	Approx. Building Area (sf)	Location	Time Period	Avg. Daily Flow (gpd)	Avg. Daily Flow per Bldg. Area (gpd/sf)
CVS	10,000	Pawling	1/06 to 9/07	84	0.0084
Rite Aid	10,000	Carmel	7/07 to 9/07	303	0.0303
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Michael's	25,000	Newburgh	7/06 to 9/07	176	0.0070
AC Moore	26,000	Wappingers Falls	1/07 to 11/07	449	0.0173
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Bed Bath & Beyond	35,000	Newburgh	1/07 to 9/07	148	0.0042
Toys R Us	38,000	Middletown	4/06 to 9/07	456	0.0120
Best Buy	45,000	Middletown	4/06 to 9/07	532	0.0118
				Mean	**0.0109 gpd/sf**

Large Dry Retail Stores (greater than 40,000 S.F.)

Store	Approx. Building Area (sf)	Location	Time Period	Avg. Daily Flow (gpd)	Avg. Daily Flow per Bldg. Area (gpd/sf)
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Kohls	75,000	Middletown	4/06 to 9/07	932	0.0124
Kohls	75,000	Newburgh	10/06 to 9/07	596	0.0079
Gander Mountain	123,000	Middletown	4/06 to 9/07	976	0.0079

Mean 0.0083 gpd/sf

As can be seen from the above data, the lowest water usage for average daily flow per building area is with the small dry retail stores. This is primarily due to the fact that the smaller stores do not have customer bathrooms and have very few employees and low volume of customer usage. The next highest average daily flow per building area is for the large dry retail stores. Although the stores do have customer restrooms, a larger number of employees, and a more vibrant customer base, their water usage is spread over a large building area which lessens the average daily flow per building area. The highest average daily flow per building area lies with the medium dry retail stores. This group of stores typically does include a customer restroom, a moderate number of employees and a vibrant customer base. With the limited building square footage, the average daily flow per building area tends to be slightly higher than the other two categories. The mean for this category, which is the highest of the three categories, is 0.0109 gallons per day per square foot of building area. It is proposed to utilize this highest average daily flow per building area and round it to a value of 0.011 gallons per day per square foot.

2.1.4 Coffee Shop and Sandwich Shop

It is envisioned the project will have one coffee shop and one sandwich shop. It is anticipated that the Coffee Shop use would be similar to that of Dunkin Donuts or Starbucks, and would occupy approximately 2,500 square feet and include seating for approximately 30 customers. This use provides light snacks and beverages and would utilize water and generate wastewater primarily from restroom use and light food preparation.

Based on actual water usages provided by the owner of Dunkin Donut stores located in Putnam and Fairfield Counties, their upper average daily water usage is 650 gpd. The daily water taken off of the premises (i.e. coffee, soft drinks, etc.) ranges from 100 to 300 gpd. Assuming an average of 200 gpd is taken off site, the coffee shop total wastewater usage is 450 gpd.

It is anticipated that the sandwich shop use would be similar to that of Quizno's or Subway, and would occupy approximately 2,000 square feet and include seating for approximately 20 customers. This use provides take-out sandwiches, snacks and beverages that would utilize water and generate wastewater from restroom use and light food preparation. Low water use is achieved by utilizing paper products (no washing of customers dishes), and most of the food is sold as take-out (eaten off site). Based on the size and type of proposed sandwich shop use, the sandwich shop total wastewater usage is estimated at 400 gpd. The total wastewater usage for the coffee shop and sandwich shop is 450 gpd + 400 gpd = 850 gpd.

2.1.5 Management Space / Office Space / Meeting Rooms

It is anticipated that the management office will be staffed by up to six employees at certain times of the year for management, security and maintenance. Based on the NYSDEC's design flow of 12 gpd/employee, the management office would require a design flow of 72 gallons per day. The meeting rooms are anticipated to have a maximum occupancy of 40 people. Based on a unit design flow of 3

gpd/person, the meeting rooms would require a design flow of 120 gallons per day. It is proposed to utilize a daily design flow of 192 gallons per day for the management space, office space and meeting rooms. Note that this flow is conservative, since the meeting rooms could only be used once a week.

2.1.6 Southern SSTS Area Design Flow Summary

Based on the data collected and summarized above, the following main project wastewater design flow for the southern SSTS is established utilizing actual flow data and a factor of safety of 1.5:

Wholesale Warehouse	3,700 gpd x 1.5 =	5,550 gpd
Home Improvement Center	1,400 gpd x 1.5 =	2,100 gpd
Dry Retail	107,840 sf x 0.011 gpd/sf x 1.5 =	1,779 gpd
Coffee Shop and Sandwich Shop	850 gpd x 1.5 =	1,275 gpd
Management Space / Office Space / Meeting Rooms Allowance=		192 gpd
	Total	10,896 gpd

It is proposed to utilize a main project wastewater design flow of 11,000 gallons per day for the southern SSTS.

Recognizing the fact that the project will be serviced by a subsurface sewage treatment system (SSTS) with an engineered available capacity, the main portion of the project wastewater flows will be limited to the 11,000 gpd design flow. Future retail users must have wastewater flows which fit into the flow projections for the project. In order to assure the project wastewater design flow is not exceeded the applicant would agree to appropriate controls to assure each user's wastewater flows fit the project's design flows. One such control would require each specific user present the Town Building Department with a wastewater design flow at the time they apply for their building permit, or with any change in occupancy. This will allow for the monitoring of design flow to assure that all users wastewater generation falls within the system design capacity. It should be noted that actual water and wastewater flow metering/monitoring will be required as part of the water and sewer permitting with the PCDOH, NYCDEP and NYSDEC. This metering/monitoring will provide an assurance that the actual project flows do not exceed the system design capacity. As discussed elsewhere in this report, the northern SSTS area also provides additional SSTS capacity of 2,000 to 3,000 gpd if increased flows are desired.

2.1.7 References

- Home Depot, 9 locations in NJ flow data from report entitled "Water Consumption Study for Home Depot" prepared by Menlo Engineering Associates, Inc. dated June 26, 2003.
- Wappingers Falls flow data provided by Severn Trent Services, Inc. for the Alpine Commons site.
- Carmel flow data provided by Town of Carmel Engineering Department for Carmel Water District #2.
- Pawling flow data provided by Pawling Joint Sewer Commission.
- Middletown flow data provided by Town of Wallkill Water Department.
- Newburgh flow data provided by Town of Newburgh.

2.2 NORTHERN SSTS AREA

There is a 2,000 sf building proposed on the northern portion of the site located in the Town of Kent. The building is proposed to be supported by its own well and SSTS. The intended use of this building is currently unknown, although a conservative water usage design flow of 400 gpd has been estimated for the building. If this building were to be constructed as dry retail use the water usage design flows would be minimal and much less than 400 gpd. Due to the ample area to construct the northern SSTS a design flow of 400 gpd has been chosen to allow for flexibility of use in this location.

If the project design flows were to increase, there is an additional capacity in the northern SSTS area to handle 2,000 to 3,000 gpd of sewer flows. The sewer flows for the main portion of the project could then be proportionately split to the northern and southern SSTS areas based on their design capacity to accept sewer flows. It shall be noted that the currently proposed option of providing a stand-alone well and SSTS for the building in the Town of Kent was chosen as the most appropriate and efficient design. The building in the Town of Kent could also be connected to the main project water and sewer systems (southern SSTS area) if that option is determined to be desirable. It should also be noted that conversely, some of the main project water and sewer systems could be connected to the northern water & sewer systems.

3.0 COLLECTION SYSTEM

The proposed retail configuration involves four separate buildings on the site. The wastewater collection system will consist of individual 4" diameter PVC SDR 35 sewer service connections for each building. Each sewer service connection will discharge into a precast concrete septic tank for primary treatment, which will flow by gravity through a common effluent sewer main to the effluent pump station. The sewer lines are proposed to be located generally in the proposed roads, parking areas and landscaped islands. Wastewater flow from all of the proposed buildings will be by gravity to the septic tanks and pump station.

The primary treatment area for each building will contain a precast concrete septic tank. The capacity in gallons for each septic tank will be sized to be 1.5 times the design flow for the contributing buildings. At this time, the septic tank capacities are estimated to vary from 1,000 gallons to 3,000 gallons. All of the septic tanks for the main portion of the project will discharge to a common 8" diameter PVC SDR 35 effluent to a sewer main precast concrete duplex pump station. The pump station will be located at the north end of the developed area, and will convey the septic tank effluent through a 2" diameter PVC SDR21 force main to the southern subsurface sewage treatment system (SSTS) area. If it is decided to utilize the northern SSTS area for additional sewer flows, the proportional distribution would occur at the pump station. An automatic standby emergency backup generator is proposed for the pump station to provide continuous operation of the wastewater system, even during a power outage. The retail building in the Town of Kent will have its own septic tank and SSTS.

4.0 PROPOSED SUBSURFACE SEWAGE TREATMENT SYSTEMS

The southern subsurface sewage treatment system (SSTS) area for the main portion of the project is proposed to be located in the southwestern portion of the site. A second SSTS area was also evaluated in the northern portion of the site, which is proposed to service the 2,000 square foot building in the Town of Kent, north of the access drive. Wastewater will be conveyed to the southern SSTS via an effluent pump station and force main. The southern SSTS area slopes from gently to gradually steeper to the east. The western boundary in this area borders the relatively densely developed area of Lake Carmel in the Town of Kent. The southern SSTS is proposed to be located on the eastern slope, which entirely pitches away from the developed area of Lake Carmel and towards Interstate 84. The existing ground slope in the proposed SSTS area ranges from gently sloping (8%to 15%) with an average slope of approximately 10%. Note that PCDOH and NYCDEP codes allow absorption trenches to be installed in ground slopes up to 20% for retail/commercial SSTS's.

The location of the proposed southern SSTS (specifically the absorption trenches) have been sited to maximize the separation distance to adjoining wells. PCDOH and NYSDEC regulations require a 100-foot minimum distance from a well to an SSTS (200 feet minimum if the well is located directly downhill of an SSTS). For the Patterson Crossing project, all adjacent wells are not in the direct line of drainage from the southern SSTS

area. Therefore, the 100 foot minimum separation distance would apply. Based on comments received during the DEIS review, there are perceived concerns regarding the proximity of the proposed SSTS to adjoining wells (both in Patterson and Kent). As the SSTS design progresses, it has been decided to utilize the eastern portion of the southern SSTS area, in order to maximize the separation distance to nearby adjoining wells. The closest well to the southern SSTS is located in the Town of Patterson, and is approximately 225 feet away from the closest absorption trench. . The separation distance on the envisioned absorption trench layout from the closest absorption trenches to the western property line (A.K.A. Kent Town line) is at least 275 feet, providing separations far in excess (almost three times) of the regulatory standards.

Soil testing was performed and witnessed by representatives of the Putnam County Health Department (PCHD) and New York City Department of Environmental Protection (NYCDEP), See Appendix A and B for results of field testing. Appendix A provides the results of the southern SSTS area and Appendix B provides the results of the northern SSTS area. Note the northern SSTS area proposed to service the 2,000 square foot building located in the Town of Kent, north of the main access drive, and possible excess flows from the main project.

In general, the soils in the southern SSTS area are compacted sandy loam with rock greater than 8' and groundwater greater than 6'. Percolation tests were conducted which yielded stabilized rates between 8 min/in and 24 min/in. Based on the testing performed and witnessed, it is estimated that approximately 9,167 L.F. of standard two foot wide absorption trenches will be required for the primary SSTS area, and an equal amount for the expansion area. This results in approximately 3.25 acres for the primary SSTS area and 3.25 acres for the SSTS expansion area or a total of 6.5 acres for the entire southern SSTS area. Note that the total area set aside for the southern SSTS is 17 acres ±. The absorption trenches in the primary SSTS will be divided into 10 sections, and alternately dosed by the pump station. Each of the 10 areas includes 924 L.F. of 2-foot wide trench each. These areas will be distributed over the entire SSTS area (6.5 acres) to evenly disburse the wastewater.

In general, the soils in the northern SSTS area are compacted sandy loam with rock and groundwater greater than 8'. Percolation tests were conducted which yielded stabilized rates between 15 min/in and 20 min/in. Based on the testing performed and witnessed, it is estimated that approximately 286 L.F. of standard two foot wide absorption trenches will be required for the primary SSTS, area and an equal amount for the expansion area. This results in approximately 2,000 sf for the primary SSTS area and 2,000 sf for the SSTS expansion area or a total of 4,000 sf for the entire northern SSTS area.

In addition to normal regulatory SSTS testing and analysis a hydrogeological study of SSTS groundwater impact was conducted. A separate report entitled "Hydrogeological Investigation (Mounding Analysis) Patterson Crossing South Disposal Area" prepared by GeoDesign Inc. is referenced relative to SSTS groundwater impacts. The recommendations of this report will be an integral part of the SSTS designs for the project

5.0 ALTERNATIVES

An alternative to the proposed SSTS is a wastewater treatment plant with a subsurface discharge. The wastewater treatment plant would be designed to treat the wastewater generated by the project to surface water discharge standards however the discharge would be to a subsurface disposal system. The subsurface disposal system design requirements are similar to a subsurface treatment system. The primary differences are that a treated disposal system can utilize an increased application rate and only 50% expansion area is required. The proposed subsurface disposal area would be in the same area as the proposed subsurface treatment area, but would require a reduced disposal area footprint. This option was studied during the SEQRA process, and is an option that could be utilized now or in the future. At present, it is not planned to be utilized.

APPENDIX A

Southern SSTS Area Field Test Results

The following is a summary of the witnessed deep test holes as observed by Zac Pearson (Insite Engineering), Mike Budzinski, PE (PCDOH), and Joe Ziminsky (NYCDEP) on June 14, 2005.

Witnessed Deep Test Hole No.	Soil Description
S-1:	0” to 6” topsoil, 6” to 30” light brown moderately compacted sandy loam with gravel, 30” to 112+” brown compacted fine sandy loam. No Rock, Groundwater at 108”
S-2:	0” to 6” topsoil, 6” to 40” orange brown slightly compacted sandy loam, 40” to 114+” brown compacted fine sandy loam. No Rock, Groundwater at 114”
S-3:	0” to 10” topsoil, 10” to 48” orange brown moderately compacted sandy loam, 40” to 114+” brown compacted fine sandy loam. No Rock, No Groundwater
S-4:	0” to 10” topsoil, 10” to 22” orange brown moderately compacted sandy loam with gravel, 22” to 100” olive brown compacted fine sandy loam. Rock at 100”, Groundwater at 94”
S-5:	0” to 6” topsoil, 6” to 36” light brown moderately compacted sandy loam, 36” to 110+” brown compacted fine sandy loam. No Rock, Groundwater seep at 84”
S-6:	0” to 16” topsoil, 16” to 38” orange brown moderately compacted sandy loam, 38” to 114+” brown compacted fine sandy loam. No Rock, Groundwater at 110”
S-7:	0” to 12” topsoil, 12” to 36” light brown moderately compacted sandy loam, 36” to 114+” brown compacted fine sandy loam. No Rock, Groundwater seep at 72”
S-8:	0” to 4” topsoil, 4” to 42” orange brown moderately compacted sandy loam with gravel, 42” to 114+” brown compacted fine sandy loam. No Rock, Groundwater seep at 108”
S-9:	0” to 6” topsoil, 6” to 54” orange brown moderately compacted sandy loam, 54” to 114+” brown compacted fine sandy loam. No Rock, Groundwater seep at 92”
S-10:	0” to 10” topsoil, 10” to 40” light brown moderately compacted sandy loam, 40” to 120+” brown compacted fine sandy loam. No Rock, Groundwater seep at 114”

The following is a summary of the witnessed perc tests as observed by Zac Pearson , Paul Occhiogrosso (Insite Engineering), Jeff Buckley (Geodesign), Joe Paravati and Gene Reed (PCDOH) on June 28, 2005.

Percolation Hole No.	Perc Rate (min/inch)
S-1	10.0
S-2	8.0
S-3	20.0
S-4	12.0
S-5	8.3
S-6	24.0
S-7	15.0
S-8	15.0
S-9	12.0
S-10	15.0

APPENDIX B

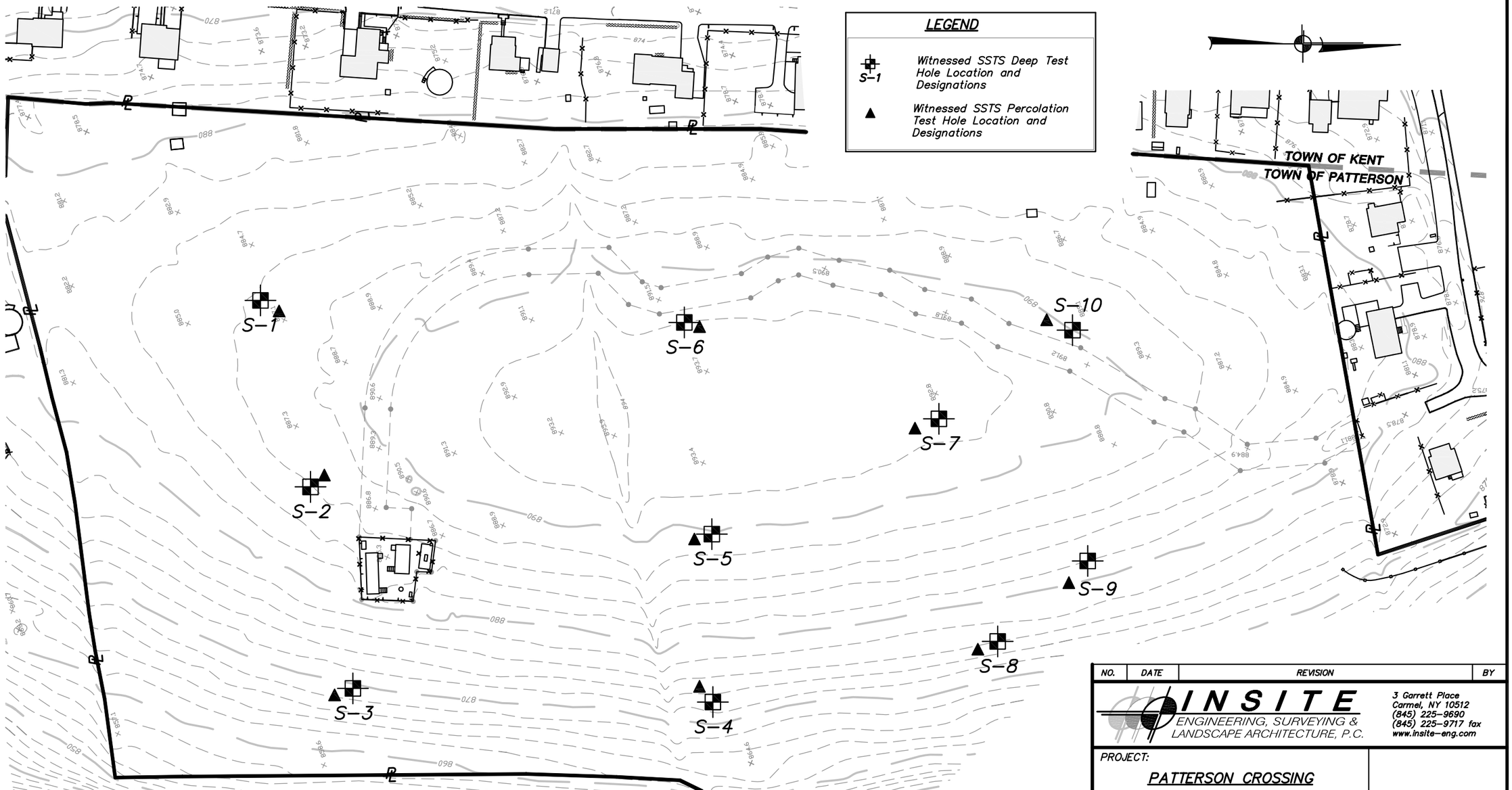
Northern SSTS Area Field Test Results

The following is a summary of the witnessed deep test holes as observed by Zac Pearson (Insite Engineering), Mike Budzinski, PE (PCDOH), and Joe Ziminsky (NYCDEP) on June 14, 2005.

Witnessed Deep Test Hole No.	Soil Description
N-1:	0” to 4” topsoil, 4” to 40” yellow brown moderately compacted sandy loam, 40” to 114+” brown compacted fine sandy loam. No Rock, Groundwater at 108”
N-2:	0” to 4” topsoil, 4” to 27” tan moderately compacted sandy loam, 27” to 114+” brown compacted fine sandy loam. No Rock, Groundwater at 108”
N-3:	0” to 4” topsoil, 4” to 31” brown moderately compacted sandy loam, 31” to 48” yellow brown moderately compacted fine sandy loam, 48” to 114+” brown compacted fine sandy loam. No Rock, No Groundwater
N-4:	0” to 4” topsoil, 4” to 44” orange brown moderately compacted fine sandy loam with gravel, 44” to 112+” brown compacted fine sandy loam with gravel. No Rock, Groundwater at 108”
N-5:	0” to 6” topsoil, 6” to 44” orange brown moderately compacted fine sandy loam, 44” to 106+” brown compacted fine sandy loam. No Rock, Groundwater at 105”
N-6:	0” to 4” topsoil, 4” to 36” orange brown slightly compacted sandy loam, 38” to 114+” brown compacted fine sandy loam. No Rock, Groundwater at 108”
N-7:	0” to 4” topsoil, 4” to 40” light brown moderately compacted sandy loam with gravel, 40” to 108+” brown compacted fine sandy loam. No Rock, Groundwater seep at 106”
N-8:	0” to 4” topsoil, 4” to 40” light brown moderately compacted sandy loam with gravel, 40” to 120+” brown compacted fine sandy loam. No Rock, Groundwater seep at 116”
N-9:	0” to 12” topsoil, 12” to 40” orange brown moderately compacted fine sandy loam with gravel, 40” to 108+” brown compacted fine sandy loam with gravel. No Rock, No Groundwater
N-10:	0” to 4” topsoil, 4” to 30” orange brown moderately compacted fine sandy loam with gravel, 30” to 108+” red brown compacted fine sandy loam. No Rock, Groundwater seep at 114”

The following is a summary of the witnessed perc tests as observed by Zac Pearson (Insite Engineering), and Jeff Buckley (Geodesign), and Joe Paravati (PCDOH) on June 29, 2005	
Percolation Hole No.	Perc Rate (min/inch)
N-1	30.0
N-2	20.0
N-3	30.0
N-4	15.0
N-5	12.0
N-6	15.0
N-7	20.0
N-8	15.0
N-9	6.0
N-10	6.0

FIGURES



NO.	DATE	REVISION	BY

INSITE
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.
3 Garrett Place
Carmel, NY 10512
(845) 225–9690
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PROJECT:
PATTERSON CROSSING
N.Y.S. ROUTE 311, TOWNS OF PATTERSON & KENT, PUTNAM COUNTY, NEW YORK

DRAWING:
SOUTHERN (MAIN) SSTS AREA FIELD TESTING LOCATION

PROJECT NO.	01124.100	PROJECT MANAGER	JJC
DATE	7–29–05	DRAWN BY	ZMP
SCALE	AS SHOWN	CHECKED BY	JMW

FIGURE NO.
1

N–1
N–2
N–3
N–4
N–5
N–6
N–7
N–8
N–9
N–10

TOWN OF KENT
TOWN OF PATTERSON

N.Y.S. ROUTE 311

LEGEND

N–1 — Witnessed SSTS Deep Test Hole Location and Designations

▲ — Witnessed SSTS Percolation Test Hole Location and Designations

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

NO.	DATE	REVISION	BY

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ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.
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PROJECT:
PATTERSON CROSSING
N.Y.S. ROUTE 311, TOWNS OF PATTERSON & KENT, PUTNAM COUNTY, NEW YORK

DRAWING:
NORTHERN (SECONDARY) SSTS AREA FIELD TESTING LOCATION

PROJECT NO.	01124.100	PROJECT MANAGER	JJC
DATE	7–29–05	DRAWN BY	ZMP
SCALE	AS SHOWN	CHECKED BY	JMW

FIGURE NO. 2

Appendix I

TRAFFIC WARRANT ANALYSIS AND BACKGROUND TRAFFIC DATA

PATTERSON CROSSING RETAIL CENTER
Final Environmental Impact Statement

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NYS Route 311 and Fair Street

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N
W E
S

Figure I-1: Existing Condition of Fair Street and Terry Hill Road
Patterson Crossing Retail Center FEIS
Town of Patterson and Town of Kent,
Putnam County, New York
Source: NYS GIS Clearinghouse

File 04031 08/04/07
WP3/04031/FEIs Appendix I

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Kent** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1** Critical Approach Speed: **35**
Minor Street: **Terry Hill Road** Lanes: **1**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☐ Yes ☒ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☐ 70% ☒ 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Applicable: ☒ Yes ☐ No
Satisfied: ☐ Yes ☐ No

Warrant 1 is satisfied if Condition A is "100%" satisfied.
Warrant 8 is also satisfied if both Warrant 1 and Warrant 2 are "80%" satisfied.

Warrant 1 - Minimum Vehicular Volume

100% Satisfied: ☒ Yes ☐ No
80% Satisfied: ☒ Yes ☐ No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eighth Highest Hours							
					5 p.m. to 6 p.m.	4 p.m. to 5 p.m.	8 a.m. to 9 a.m.	7 a.m. to 8 a.m.	3 p.m. to 4 p.m.	6 p.m. to 7 p.m.	9 a.m. to 10 a.m.	2 p.m. to 3 p.m.
Approach Lanes	**1**		**2 or more**									
Volume Level	**100%**	**70%**	**100%**	**70%**								
Both Approaches on Major Street	**500** *(400)*	350	600 (480)	420	***923***	***885***	***839***	***816***	***803***	***760***	***690***	***657***
Highest Approach on Minor Street	**150** *(120)*	105	200 (160)	140	***195***	***282***	***305***	***349***	***250***	***176***	***213***	***193***

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours . Condition is 80% satisfied if parenthetical volumes are met for eight hours.

WARRANT 2 - INTERRUPTION OF CONTINUOUS TRAFFIC

Warrant 2 is intended for application where the traffic volume is so heavy that traffic on the minor street suffers excessive delay.

Applicable: ☒ Yes ☐ No
Excessive Delay: ☐ Yes ☐ No
100% Satisfied: ☐ Yes ☒ No
80% Satisfied: ☒ Yes ☐ No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eighth Highest Hours							
					5 p.m. to 6 p.m.	4 p.m. to 5 p.m.	8 a.m. to 9 a.m.	7 a.m. to 8 a.m.	3 p.m. to 4 p.m.	6 p.m. to 7 p.m.	9 a.m. to 10 a.m.	2 p.m. to 3 p.m.
Approach Lanes	**1**		**2 or more**									
Volume Level	**100%**	**70%**	**100%**	**70%**								
Both Approaches on Major Street	**750** *(600)*	525	900 (720)	630	***923***	***885***	***839***	***816***	***803***	***760***	*690*	*657*
Highest Approach on Minor Street	**75** *(60)*	53	100 (80)	70	***195***	***282***	***305***	***349***	***250***	***176***	***213***	***193***

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours . Condition is 80% satisfied if parenthetical volumes are met for eight hours.

WARRANT 8 - COMBINATION OF WARRANTS

Warrant 1 80% Satisfied: ☒ Yes ☐ No
Warrant 2 80% Satisfied: ☒ Yes ☐ No

Applicable: ☒ Yes ☐ No
Both Warrant 1 and 2 Satisfied: ☒ Yes ☐ No

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Kent** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1**
Minor Street: **Terry Hill Road** Lanes: **1**

WARRANT 3 - PEDESTRIAN VOLUME

Applicable: ☒ Yes ☐ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if condition 1 or 2 is fulfilled and condition 3 is fulfilled.

Criteria	Hour	Pedestrian Volume	Pedestrian Gaps	Fulfilled? Yes	Fulfilled? No
1. Pedestrian volume crossing the major street is 100 ped/hr or more for each of any four hours and there are less than 60 gaps per hour in the major street traffic stream of adequate length.		est. < 25/hr			☒
2. Pedestrian volume crossing the major street is 190 ped/hr or more for any one hour and there are less than 60 gaps per hour in the major street traffic stream of adequate length.		est. < 25/hr			☒
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.				☒	

WARRANT 4 - SCHOOL CROSSING

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Location Greater than 0.7 miles from schools so students are bussed

Criteria				Fulfilled? Yes	Fulfilled? No
1. There are a minimum of 20 students crossing the major street during the highest crossing hour.	Students:	Hour:			x
2. There are fewer adequate gaps in the major street traffic stream during the period when the children are using the crossing than the number of minutes in the same period.		Minutes:	Gaps:		
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.				x	

WARRANT 5 - PROGRESSIVE MOVEMENT

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☐ No

Indicate if the criteria are fulfilled in the boxes provided. The warrant is satisfied if either criterion is fulfilled. This warrant should not be applied when the resulting signal spacing would be less than 300 m (1,000 ft).

Too far to anticipate platooning

Criteria	Fulfilled? Yes	Fulfilled? No
1. On a one-way street or a street that has traffic predominately in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.		
2. On a two-way street, adjacent signals do not provide the necessary degree of platooning, and the proposed and adjacent signals will collectively provide a progressive operation.		

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Kent** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1** Critical Approach Speed: **35-40**
Minor Street: **Terry Hill Road** Lanes: **1**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☐ Yes ☒ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☐ 70% ☒ 100%

WARRANT 9 - FOUR-HOUR VEHICULAR VOLUME

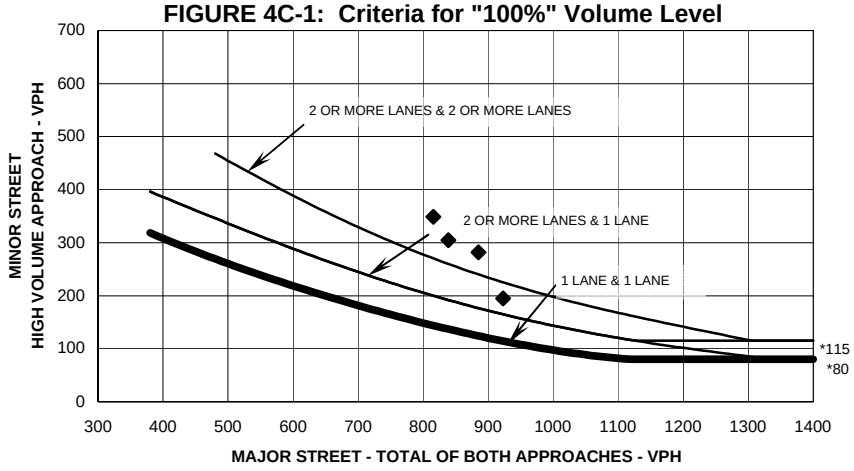
If all fourth highest points lie above the appropriate line, then the warrant is satisfied.

Applicable: ☒ Yes ☐ No
Satisfied: ☒ Yes ☐ No

Plot four volume combinations on the applicable figure below.

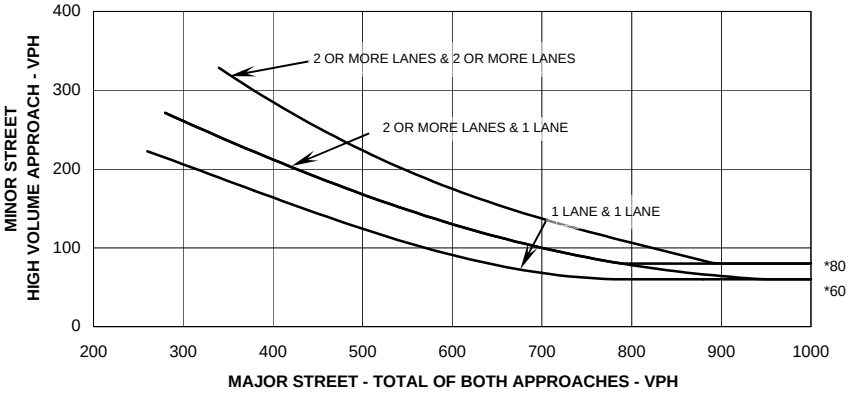
Fourth Highest Hours	Volumes	
	Major Street	Minor Street
5 p.m. to 6 p.m.	923	195
4 p.m. to 5 p.m.	885	282
8 a.m. to 9 a.m.	839	305
7 a.m. to 8 a.m.	816	349

FIGURE 4C-1: Criteria for "100%" Volume Level



** Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-2: Criteria for "70%" Volume Level
(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Kent** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1** Critical Approach Speed: **35-40**
Minor Street: **Terry Hill Road** Lanes: **1**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☐ Yes ☒ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☐ 70% ☒ 100%

WARRANT 11 - PEAK HOUR VOLUME

Applicable: ☒ Yes ☐ No
Satisfied: ☒ Yes ☐ No

If the plotted point lies above the appropriate line, then the warrant is satisfed.

Plot volume combination on the applicable figure below.

Existing Peak Hour		
2nd	885	282

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Existing Peak Hour		
2nd	885	282

WARRANT 10 PEAK HOUR DELAY

If all three criteria are fullfilled

Criteria

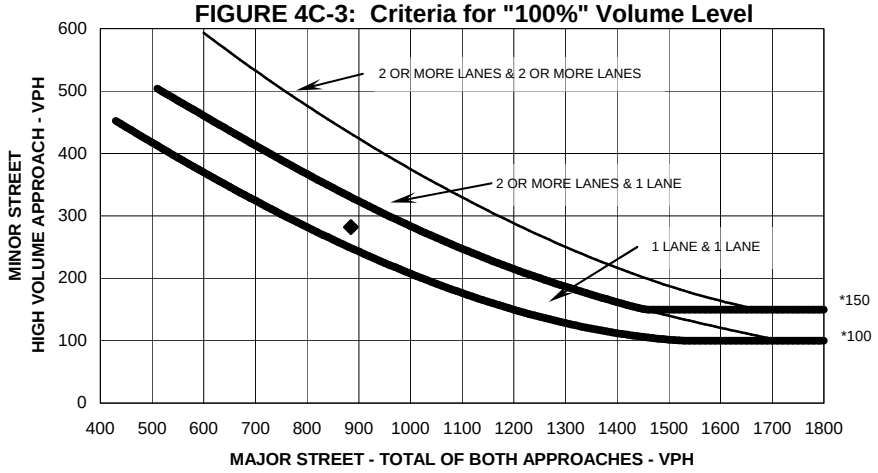
1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*	3.7/5.5	
Fulfilled?: ☒ Yes	☒ No	

mets based on adjusting to 2006 volume

2. Volume on Minor Approach *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	100	150
Volume*	282	
Fulfilled?: ☒ Yes	☐ No	

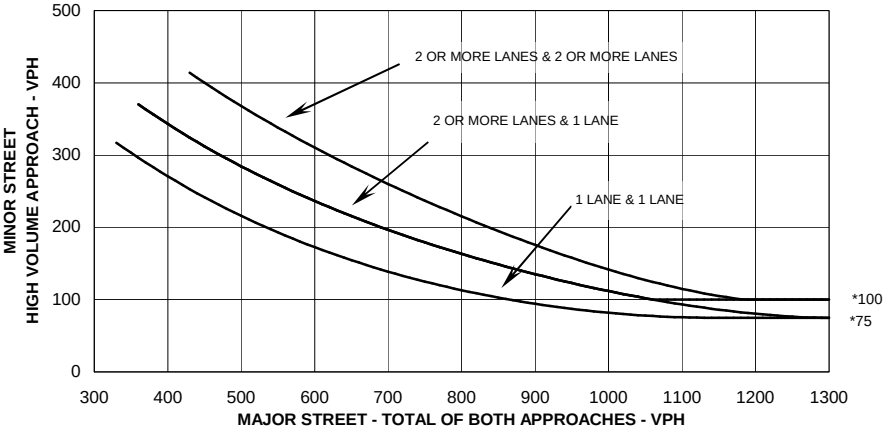
3. Total Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*		1,167
Fulfilled?: ☒	☐ No	

FIGURE 4C-3: Criteria for "100%" Volume Level



** Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level
(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Kent** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1**
Minor Street: **Terry Hill Road** Lanes: **1**

WARRANT 6 - COLLISION (ACCIDENT) EXPERIENCE

Applicable: ☒ Yes ☐ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled, the corresponding volume, and other information in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Criteria		Hour	Volume	Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. One of the warrants to the right is met.	Warrant 1 (80% satisfied)			☒		☒	
	Warrant 2, (80% satisfied)			☒			
	Warrant 4, Pedestrian Volume at 80% of volume requirements: 80 ped/hr for four (4) hours or 152 ped/hr for one (1) hour				☒		
			<25/hr				
2. Adequate trial of other remedial measure has failed to reduce crash frequency.		Measure tried:					☒
3. Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12-mo. period.		Number of crashes per 12 months: **<3**					☒

WARRANT 7 - ROADWAY NETWORK

Applicable: ☒ Yes ☐ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled, and the corresponding volume or other information in the boxes provided. The warrant is satisfied if at least one of the criteria is fulfilled and if all intersecting routes have one or more of the characteristics listed.

Criteria							Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Both of the criteria to the right are met.	a. Total entering volume of at least 1,000 veh/hr during a typical weekday peak hour.			Entering Volume: 1,167			☒		☒	
	b. Five-year projected volumes that satisfy Warrants 1, 2, 8, 9, and 11.	Warrant:		1	2	8	9	11		
		Satisfied?:		☒	☒	☒	☒	☒		
2. Total entering volume at least 1,000 veh/hr for each of any 5 hrs of a non-normal business day (Sat. or Sun.)	12 p.m. to 1 p.m.	11 a.m. to 12 p.m.	1 p.m. to 2 p.m.	5 p.m. to 6 p.m.	2 p.m. to 3 p.m.	← **Hour**			☐	☒
	951	946	941	939	929	← **Volume**				

Characteristics of Major Routes		Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Part of the street or highway system that serves as the principal roadway network for through traffic flow.	Major Street:	☒			☒
	Minor Street:		☒		
2. Rural or suburban highway outside of, entering, or traversing a city.	Major Street:		☒		
	Minor Street:		☒		
3. Appears as a major route on an official plan.	Major Street:	☒			
	Minor Street:		☒		

CONCLUSIONS

Five Warrants Met

Warrants Satisfied: **1 8 9 10 11**

Remarks: New ATRs indicate Warrant 10 was met in 2006.
Insufficent data to determine if Warrant 10 is met in the a.m. peak hour prior to 2006.

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

Warrant Analysis Background
NYS Route 311 and Terry Hill Road
Table I-1

Warrant #1 Lanes	Volumes Required Major Streets	Volumes Required Minor Street
1	**500**	**150**
2	600	200

Warrant #2 Lanes	Volumes Required Major Streets	Volumes Required Minor Street
1	**750**	**75**
2	900	100

Requirement			500	150		750	75	
Hour Begins	Traffic * Route 311 Major Streets	Traffic* Terry Hill NB Minor Street	Met yes/no Major Streets	Met yes/no Minor Street	Warrant #1 yes/no Both	Met yes/no Major Streets	Met yes/no Minor Street	Warrant #2 yes/no Both
12:00 AM	87	13	no	no	no	no	no	no
1:00 AM	47	10	no	no	no	no	no	no
2:00 AM	26	4	no	no	no	no	no	no
3:00 AM	19	9	no	no	no	no	no	no
4:00 AM	37	28	no	no	no	no	no	no
5:00 AM	127	70	no	no	no	no	no	no
6:00 AM	471	243	no	YES	no	no	YES	no
7:00 AM	816	349	YES	YES	YES	YES	YES	YES
8:00 AM	839	305	YES	YES	YES	YES	YES	YES
9:00 AM	690	213	YES	YES	YES	no	YES	no
10:00 AM	564	144	YES	no	no	no	YES	no
11:00 AM	523	121	YES	no	no	no	YES	no
12:00 PM	580	140	YES	no	no	no	YES	no
1:00 PM	574	162	YES	YES	YES	no	YES	no
2:00 PM	657	193	YES	YES	YES	no	YES	no
3:00 PM	803	250	YES	YES	YES	YES	YES	YES
4:00 PM	885	282	YES	YES	YES	YES	YES	YES
5:00 PM	923	195	YES	YES	YES	YES	YES	YES
6:00 PM	760	176	YES	YES	YES	YES	YES	YES
7:00 PM	580	133	YES	no	no	no	YES	no
8:00 PM	409	88	no	no	no	no	YES	no
9:00 PM	322	61	no	no	no	no	no	no
10:00 PM	233	39	no	no	no	no	no	no
11:00 PM	148	24	no	no	no	no	no	no
Total (met)			13	10	9	6	15	6
					WARRANT MET			**warrant not met**
Daily Traffic	11121	3252						

*Average of a Tuesday, Wednesday, and Thursday

Eastbound on Route 311 West of Terry Hill Road

Hourly Traffic Volumes Table I-2

Hour Begins	Tuesday 11-28-06	Wednesday 11-29-06	Thursday 11-30-06	Friday 12-01-06	Saturday 12-02-06	Sunday 12-03-06	Monday 12-04-06	Tuesday 12-05-06
12:00 AM		26	37	33	64	78	28	30
1:00 AM		15	21	24	47	42	11	17
2:00 AM		12	15	10	31	26	11	5
3:00 AM		9	7	11	29	31	9	6
4:00 AM		18	16	30	23	27	19	24
5:00 AM		81	85	87	39	30	87	85
6:00 AM		304	283	287	86	52	307	286
7:00 AM		461	480	439	167	76	461	461
8:00 AM		417	407	403	231	144	391	484
9:00 AM		380	383	335	300	221	371	382
10:00 AM		280	303	263	340	257	284	292
11:00 AM		274	247	292	344	313	310	275
12:00 PM	21	300	293	284	362	302	293	304
1:00 PM	270	299	286	294	354	359	290	274
2:00 PM	337	339	312	361	350	310	314	355
3:00 PM	403	392	414	318	344	294	359	97
4:00 PM	438	375	426	387	337	266	385	
5:00 PM	363	363	381	372	338	240	390	
6:00 PM	304	338	276	309	268	167	289	
7:00 PM	203	236	229	230	219	171	264	
8:00 PM	159	160	177	166	175	135	153	
9:00 PM	131	117	123	143	168	111	106	
10:00 PM	96	97	98	137	140	67	70	
11:00 PM	64	57	59	104	113	45	53	
Total	2789	5350	5358	5319	4869	3764	5255	3377

Westbound Route 311 East of Terry Hill Road

Hourly Traffic Volumes Table I-3

Hour Begins	Tuesday 11-28-06	Wednesday 11-29-06	Thursday 11-30-06	Friday 12-01-06	Saturday 12-02-06	Sunday 12-03-06	Monday 12-04-06	Tuesday 12-05-06
12:00 AM		47	61	59	99	132	41	59
1:00 AM		22	40	42	48	80	33	25
2:00 AM		15	17	11	48	40	4	15
3:00 AM		8	20	15	28	32	12	7
4:00 AM		20	18	20	25	22	13	15
5:00 AM		49	38	52	22	28	47	44
6:00 AM		188	188	165	63	32	155	165
7:00 AM		349	353	329	141	77	307	345
8:00 AM		534	336	289	181	120	325	340
9:00 AM		317	319	335	244	170	298	289
10:00 AM		255	308	265	294	212	259	255
11:00 AM		270	231	245	327	231	245	273
12:00 PM		285	270	278	354	310	291	288
1:00 PM	289	297	287	305	344	364	294	284
2:00 PM	330	315	337	314	353	350	304	339
3:00 PM	415	408	376	400	353	333	397	96
4:00 PM	423	496	497	477	349	342	462	
5:00 PM	544	546	572	526	403	316	609	
6:00 PM	496	386	479	448	351	271	462	
7:00 PM	335	408	328	285	293	198	318	
8:00 PM	218	256	257	238	224	217	223	
9:00 PM	183	201	212	179	178	135	183	
10:00 PM	121	156	130	169	183	86	145	
11:00 PM	81	86	98	164	157	57	78	
Total	3435	5914	5772	5610	5062	4155	5505	2839

Northbound on Terry Hill Road South of Route 311 Hourly Traffic Volumes Table I-4

Hour Begins	Tuesday 11-28-06	Wednesday 11-29-06	Thursday 11-30-06	Friday 12-01-06	Saturday 12-02-06	Sunday 12-03-06	Monday 12-04-06	Tuesday 12-05-06
12:00 AM		11	14	19	43	60	10	13
1:00 AM		4	14	16	26	25	4	12
2:00 AM		1	9	7	15	22	9	2
3:00 AM		6	8	6	8	24	14	12
4:00 AM		21	31	39	14	6	27	31
5:00 AM		77	58	67	27	17	76	74
6:00 AM		246	226	194	60	34	249	257
7:00 AM		321	336	270	125	67	397	391
8:00 AM		289	272	265	195	94	376	354
9:00 AM		191	213	214	205	189	252	236
10:00 AM		116	151	158	226	258	153	166
11:00 AM		112	111	113	275	210	124	140
12:00 PM		137	120	133	235	344	166	164
1:00 PM	122	148	145	130	243	245	161	193
2:00 PM	178	183	179	171	226	241	171	218
3:00 PM	282	250	218	271	211	196	296	148
4:00 PM	338	236	273	255	216	227	283	
5:00 PM	184	188	212	173	198	155	224	
6:00 PM	166	176	185	221	267	140	180	
7:00 PM	151	130	119	135	173	129	143	
8:00 PM	87	84	92	101	194	92	124	
9:00 PM	47	75	60	80	92	54	141	
10:00 PM	42	40	35	70	73	35	32	
11:00 PM	25	18	30	69	73	28	23	
Total	1622	3060	3111	3177	3420	2892	3635	2411

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Patterson** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1** Critical Approach Speed: **35-45**
Minor Street: **Patterson Crossing Retail Center Site Access** Lanes: **2** Posted 45 anticipated 35-40 in future

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☐ Yes ☒ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☐ 70% ☒ 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Applicable: ☒ Yes ☐ No
Satisfied: ☒ Yes ☐ No

Warrant 1 is satisfied if Condition A is "100%" satisfied.
Warrant 8 is also satisfied if both Warrant 1 and Warrant 2 are "80%" satisfied.

Warrant 1 - Minimum Vehicular Volume
* see Table I-6

100% Satisfied: ☒ Yes ☐ No
80% Satisfied: ☒ Yes ☐ No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eighth Highest Hours *							
Approach Lanes	1		2 or more		4 p.m. to 5 p.m.	5 p.m. to 6 p.m.	12 p.m. to 1 p.m.	3 p.m. to 4 p.m.	6 p.m. to 7 p.m.	1 p.m. to 2 p.m.	2 p.m. to 3 p.m.	11a.m. to 12 p.m.
Volume Level	100%	70%	100%	70%								
Both Approaches on Major Street	500 (400)	350	600 (480)	420	**1,564**	**1,517**	**1,418**	**1,356**	**1,342**	**1,279**	**1,237**	**1,302**
Highest Approach on Minor Street	150 (120)	105	200 (160)	140	**745**	**778**	**647**	**729**	**631**	**672**	**721**	**483**

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours . Condition is 80% satisfied if parenthetical volumes are met for eight hours.

WARRANT 2 - INTERRUPTION OF CONTINUOUS TRAFFIC

Warrant 2 is intended for application where the traffic volume is so heavy that traffic on the minor street suffers excessive delay.
* see Table I-6

Applicable: ☒ Yes ☐ No
Excessive Delay: ☒ Yes ☐ No
100% Satisfied: ☒ Yes ☐ No
80% Satisfied: ☒ Yes ☐ No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eighth Highest Hours *							
Approach Lanes	1		2 or more		4 p.m. to 5 p.m.	5 p.m. to 6 p.m.	12 p.m. to 1 p.m.	3 p.m. to 4 p.m.	6 p.m. to 7 p.m.	1 p.m. to 2 p.m.	2 p.m. to 3 p.m.	11a.m. to 12 p.m.
Volume Level	100%	70%	100%	70%								
Both Approaches on Major Street	750 (600)	525	900 (720)	630	**1,564**	**1,517**	**1,418**	**1,356**	**1,342**	**1,279**	**1,237**	**1,302**
Highest Approach on Minor Street	75 (60)	53	100 (80)	70	**745**	**778**	**647**	**729**	**631**	**672**	**721**	**483**

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours . Condition is 80% satisfied if parenthetical volumes are met for eight hours.

WARRANT 8 - COMBINATION OF WARRANTS

Warrant 1 80% Satisfied: ☒ Yes ☐ No
Warrant 2 80% Satisfied: ☒ Yes ☐ No

Applicable: ☒ Yes ☐ No
Both Warrant 1 and 2 Satisfied: ☒ Yes ☐ No

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Patterson** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1**
Minor Street: **Patterson Crossing Retail Center Site Access** Lanes: **2**

WARRANT 3 - PEDESTRIAN VOLUME

Applicable: ☒ Yes ☐ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if condition 1 or 2 is fulfilled and condition 3 is fulfilled.

Criteria	Hour	Pedestrian Volume	Pedestrian Gaps	Fulfilled? Yes	Fulfilled? No
1. Pedestrian volume crossing the major street is 100 ped/hr or more for each of any four hours and there are less than 60 gaps per hour in the major street traffic stream of adequate length.		est. < 25/hr			☒
2. Pedestrian volume crossing the major street is 190 ped/hr or more for any one hour and there are less than 60 gaps per hour in the major street traffic stream of adequate length.		est. < 25/hr			☒
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.				☒	

WARRANT 4 - SCHOOL CROSSING

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☐ No

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled. Location Greater than 0.7 miles from schools so any nearby students would be bussed

Criteria				Fulfilled? Yes	Fulfilled? No
1. There are a minimum of 20 students crossing the major street during the highest crossing hour.	Students:	Hour:			x
2. There are fewer adequate gaps in the major street traffic stream during the period when the children are using the crossing than the number of minutes in the same period.		Minutes:	Gaps:		
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.				x	

WARRANT 5 - PROGRESSIVE MOVEMENT

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☐ No

Indicate if the criteria are fulfilled in the boxes provided. The warrant is satisfied if either criterion is fulfilled. This warrant should not be applied when the resulting signal spacing would be less than 300 m (1,000 ft). Site and I-84 EB ramp signals to be about 800 apart

Criteria	Fulfilled? Yes	Fulfilled? No
1. On a one-way street or a street that has traffic predominately in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.		
2. On a two-way street, adjacent signals do not provide the necessary degree of platooning, and the proposed and adjacent signals will collectively provide a progressive operation.		

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Patterson** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1** Critical Approach Speed: **35-40**
Minor Street: **Patterson Crossing Retail Center Site Access** Lanes: **2**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☐ Yes ☒ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☐ 70% ☒ 100%

WARRANT 9 - FOUR-HOUR VEHICULAR VOLUME

If all fourth highest points lie above the appropriate line, then the warrant is satisfied.

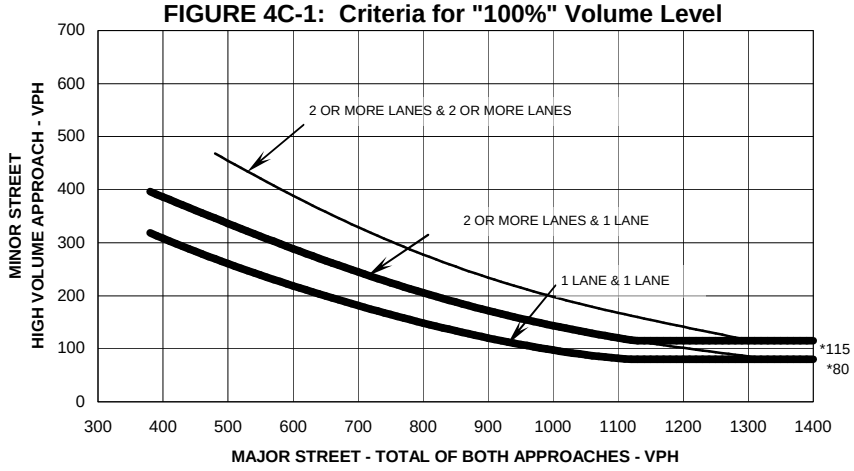
Applicable: ☒ Yes ☐ No
Satisfied: ☒ Yes ☐ No

Plot four volume combinations on the applicable figure below.

Fourth Highest Hours	Volumes*	
	Major Street	Minor Street
4 p.m. to 5 p.m.	1,564	745
5 p.m. to 6 p.m.	1,517	778
12 p.m. to 1 p.m.	1,418	647
3 p.m. to 4 p.m.	1,356	729

* see Table I-6

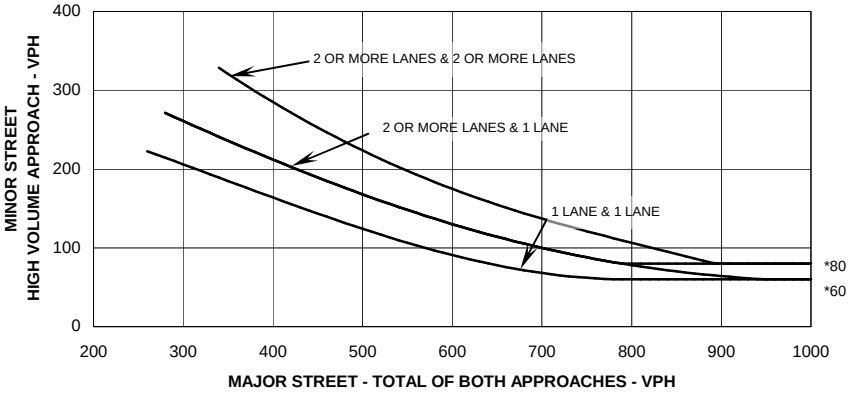
FIGURE 4C-1: Criteria for "100%" Volume Level



** Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-2: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Patterson** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1** Critical Approach Speed: **35-40**
Minor Street: **Patterson Crossing Retail Center Site Access** Lanes: **2**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☐ Yes ☒ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☐ 70% ☒ 100%

WARRANT 11 - PEAK HOUR VOLUME

Applicable: ☒ Yes ☐ No
Satisfied: ☒ Yes ☐ No

If the plotted point lies above the appropriate line, then the warrant is satisfied.

Plot volume combination on the applicable figure below.

Volumes Peak Hour *		
	1564	745

* see Table I-6

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Volumes Peak Hour *		
	1564	745

WARRANT 10 PEAK HOUR DELAY

If all three criteria are fullfilled

Criteria

1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*	797**	
Fulfilled?: ☒ Yes ☐ No		

** Based on DEIS PM Peak

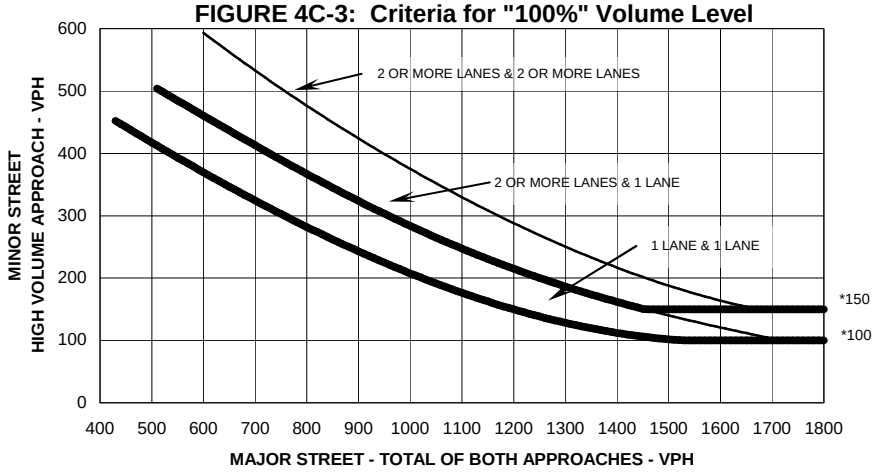
2. Volume on Minor Approach *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	100	150
Volume*	745	
Fulfilled?: ☒ Yes ☐ No		

* see Table I-6

3. Total Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*	2,309	
Fulfilled?: ☒ Yes ☐ No		

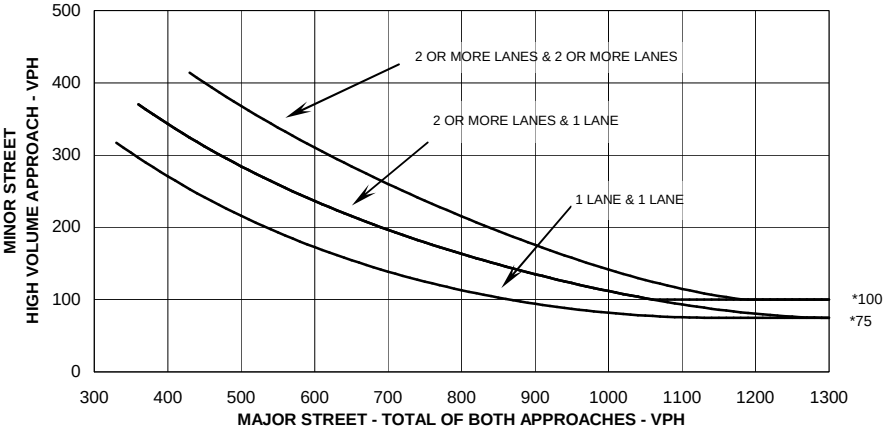
* see Table I-6

FIGURE 4C-3: Criteria for "100%" Volume Level



** Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level
(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

PRELIMINARY TRAFFIC SIGNAL WARRANT SUMMARY

Municipality: **Town of Patterson** By: **JAG TMA**
County: **Putnam** Date: **FEIS**

Major Street: **NYS Route 311** Lanes: **1**
Minor Street: **Patterson Crossing Retail Center Site Access** Lanes: **2**

WARRANT 6 - COLLISION (ACCIDENT) EXPERIENCE

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☐ No

Record hours where criteria are fulfilled, the corresponding volume, and other information in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Intersection does not exist yet

Criteria		Hour	Volume	Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. One of the warrants to the right is met.	Warrant 1 (80% satisfied)			☒		☒	
	Warrant 2, (80% satisfied)			☒			
	Warrant 4, Pedestrian Volume at 80% of volume requirements:				☒		
	80 ped/hr for four (4) hours or		<25/hr				
	152 ped/hr for one (1) hour						
2. Adequate trial of other remedial measure has failed to reduce crash frequency.		Measure tried:					☒
3. Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12-mo. period.		Number of crashes per 12 months:					☒

WARRANT 7 - ROADWAY NETWORK

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☐ No

Record hours where criteria are fulfilled, and the corresponding volume or other information in the boxes provided. The warrant is satisfied if at least one of the criteria is fulfilled and if all intersecting routes have one or more of the characteristics listed.

Criteria								Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Both of the criteria to the right are met.	a. Total entering volume of at least 1,000 veh/hr during a typical weekday peak hour.				Entering Volume: 1,334			☒		☒	
	b. Five-year projected volumes that satisfy Warrants 1, 2, 8, 9, and 11.	Warrant:	1	2	8	9	11				
		Satisfied?:	☒	☒	☒	☒	☒				
2. Total entering volume at least 1,000 veh/hr for each of any 5 hrs of a non-normal business day (Sat. or Sun.)								← Hour		☒	
								← Volume			

Characteristics of Major Routes		Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Part of the street or highway system that serves as the principal roadway network for through traffic flow.	Major Street:	☒			☒
	Minor Street:		☒		
2. Rural or suburban highway outside of, entering, or traversing a city.	Major Street:	☒			
	Minor Street:		☒		
3. Appears as a major route on an official plan.	Major Street:	☒			
	Minor Street:		☒		

CONCLUSIONS

Warrants Satisfied: 1 2 8 9 10 11

Remarks: six warrants met 2005 traffic with Patterson Crossing Retail Center

Source: Revised from NCHRP Report 457 based on NYS MUTCD June 2003.

Warrant Analysis Background
NYS Route 311 and Site Access
Table I-5

Warrant #1 Lanes	Volumes Required Major Streets	Minor Street	Warrant #2 Lanes	Volumes Required Major Streets	Minor Street
1	**500**	150	1	**750**	75
2	600	**200**	2	900	**100**

Requirement			500	200		750	100		
Hour Begins	Traffic ** Route 311 Major Streets	Traffic* site Access Minor Street	Met yes/no Major Streets	Met yes/no Minor Street	Warrant #1 yes/no Both	Met yes/no Major Streets	Met yes/no Minor Street	Warrant #2 yes/no Both	total entering volume
12:00 AM	90	0	no	no	no	no	no	no	90
1:00 AM	43	0	no	no	no	no	no	no	43
2:00 AM	31	0	no	no	no	no	no	no	31
3:00 AM	27	0	no	no	no	no	no	no	27
4:00 AM	77	0	no	no	no	no	no	no	77
5:00 AM	233	0	no	no	no	no	no	no	233
6:00 AM	639	0	YES	no	no	no	no	no	639
7:00 AM	1025	0	YES	no	no	YES	no	no	1025
8:00 AM	1104	0	YES	no	no	YES	no	no	1104
9:00 AM	1081	123	YES	no	no	YES	YES	YES	1204
10:00 AM	1207	303	YES	YES	YES	YES	YES	YES	1510
11:00 AM	1302	483	YES	YES	YES	YES	YES	YES	1785
12:00 PM	1418	647	YES	YES	YES	YES	YES	YES	2065
1:00 PM	1279	672	YES	YES	YES	YES	YES	YES	1951
2:00 PM	1237	721	YES	YES	YES	YES	YES	YES	1958
3:00 PM	1356	729	YES	YES	YES	YES	YES	YES	2085
4:00 PM	1564	745	YES	YES	YES	YES	YES	YES	2309
5:00 PM	1517	778	YES	YES	YES	YES	YES	YES	2295
6:00 PM	1342	631	YES	YES	YES	YES	YES	YES	1973
7:00 PM	1178	573	YES	YES	YES	YES	YES	YES	1751
8:00 PM	783	631	YES	YES	YES	YES	YES	YES	1414
9:00 PM	486	745	no	YES	no	no	YES	no	1231
10:00 PM	312	409	no	YES	no	no	YES	no	721
11:00 PM	159	0	no	no	no	no	no	no	159
Total (met)			15	13	11	14	14	12	
					WARRANT MET			**WARRANT MET**	
									27680

*site traffic based on p.m. peak hour adjusted over day using ITE Trip Generation, 7th edition, 2003, Page 1449, Table 2.

**Average weekday 2005 traffic (NYS DOT 7-18-05) plus site traffic*

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JAG*
Agency/Co.	*TMA*
Date Performed	*5/13/2004 HCS 5.21 update*
Analysis Time Period	*PM Peak Hour*

Site Information

Intersection	*NYS Route 311 Site Access*
Jurisdiction	*Town of Kent*
Analysis Year	*DEIS Build Condition*

Project Description *Patterson Crossing Retail Center*

East/West Street: *NYS Route 311* | North/South Street: *Site Access*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*441*	*235*	*522*	*615*	
Peak-Hour Factor, PHF	*1.00*	*0.95*	*0.87*	*0.92*	*0.98*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*464*	*270*	*567*	*627*	*0*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*1*	*1*	*1*	*0*
Configuration		*T*	*R*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*305*		*516*			
Peak-Hour Factor, PHF	*0.92*	*1.00*	*0.92*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*331*	*0*	*560*	*0*	*0*	*0*
Percent Heavy Vehicles	*2*	*0*	*2*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (veh/h)		*567*	*331*		*560*			
C (m) (veh/h)		*871*	*16*		*598*			
v/c		*0.65*	*20.69*		*0.94*			
95% queue length		*4.95*	*42.31*		*12.31*			
Control Delay (s/veh)		*16.5*	*9320*		*49.1*			
LOS		*C*	*F*		*E*			
Approach Delay (s/veh)	--	--	*3493*					
Approach LOS	--	--	*F*					

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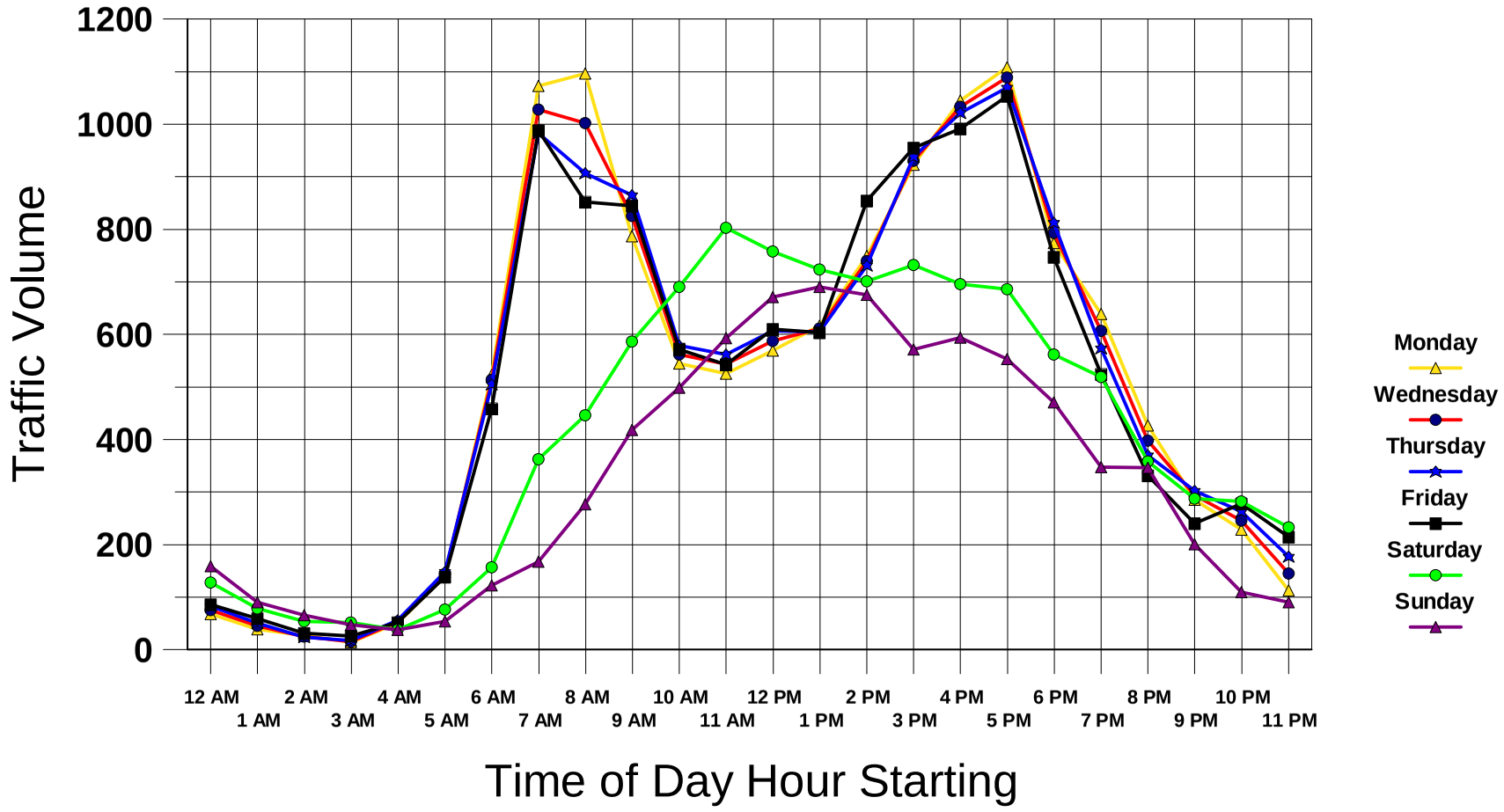
Figure I-2
Total Entering Hourly Traffic Volumes
NYS Route 311 and Fair Street



Source: Table I-6 2006 counts

NYS Route 311 and Fair Street Table I-6

Hour Begins	Nov 29, 2006 Wednesday Rt 311 Eastbound	Rt 311 Westbound	Fair Street Northbound	Total	Nov. 30, 2007 Thursday Rt 311 Eastbound	Rt 311 Westbound	Fair Street Northbound	Total	esday and Thursday Rt 311 Eastbound	Rt 311 Westbound	Fair Street Northbound	Total
12:00 AM	29	25	14	68	38	28	17	83	33.5	26.5	15.5	75.5
1:00 AM	23	14	2	39	31	13	7	51	27	13.5	4.5	45
2:00 AM	15	3	9	27	16	4	4	24	15.5	3.5	6.5	25.5
3:00 AM	4	7	3	14	8	7	3	18	6	7	3	16
4:00 AM	18	32	1	51	16	34	6	56	17	33	3.5	53.5
5:00 AM	33	88	20	141	47	76	25	148	40	82	22.5	144.5
6:00 AM	145	320	58	523	142	305	58	505	143.5	312.5	58	514
7:00 AM	261	661	151	1073	258	605	120	983	259.5	633	135.5	1028
8:00 AM	437	523	137	1097	331	442	134	907	384	482.5	135.5	1002
9:00 AM	258	398	131	787	255	464	146	865	256.5	431	138.5	826
10:00 AM	209	236	100	545	210	263	106	579	209.5	249.5	103	562
11:00 AM	198	228	99	525	218	240	104	562	208	234	101.5	543.5
12:00 PM	226	248	95	569	250	256	101	607	238	252	98	588
1:00 PM	247	261	109	617	254	252	99	605	250.5	256.5	104	611
2:00 PM	291	292	166	749	251	348	132	731	271	320	149	740
3:00 PM	349	331	243	923	356	337	245	938	352.5	334	244	930.5
4:00 PM	445	370	230	1045	461	325	236	1022	453	347.5	233	1033.5
5:00 PM	500	358	250	1108	475	338	257	1070	487.5	348	253.5	1089
6:00 PM	369	248	157	774	422	266	125	813	395.5	257	141	793.5
7:00 PM	341	173	125	639	280	182	112	574	310.5	177.5	118.5	606.5
8:00 PM	201	161	65	427	178	129	63	370	189.5	145	64	398.5
9:00 PM	141	87	58	286	179	73	51	303	160	80	54.5	294.5
10:00 PM	108	84	37	229	111	107	45	263	109.5	95.5	41	246
11:00 PM	47	50	16	113	79	74	24	177	63	62	20	145
Total	4895	5198	2276	12369	4866	5168	2220	12254	4880.5	5183	2248	12311.5

Hour Begins	Dec. 1, 2007 Friday Rt 311 Eastbound	Rt 311 Westbound	Fair Street Northbound	Total	Dec. 2, 2007 Saturday Rt 311 Eastbound	Rt 311 Westbound	Fair Street Northbound	Total	Dec. 3, 2007 Sunday Rt 311 Eastbound	Rt 311 Westbound	Fair Street Northbound	Total	Dec 4 2006 Monday Rt 311 Eastbound	Rt 311 Westbound	Fair Street Northbound	Total
12:00 AM	49	21	16	86	73	38	17	128	84	56	19	159	38	18	10	66
1:00 AM	28	22	9	59	51	16	12	79	46	35	9	90	16	8	1	25
2:00 AM	17	9	6	32	30	17	7	54	35	21	10	66	11	4	7	22
3:00 AM	16	7	3	26	23	19	10	52	24	18	6	48	6	12	2	20
4:00 AM	16	34	2	52	21	15	2	38	17	15	6	38	12	26	5	43
5:00 AM	38	76	25	139	17	47	13	77	18	35	1	54	41	56	18	115
6:00 AM	104	305	50	459	44	96	17	157	32	80	11	123	137	343	43	523
7:00 AM	259	605	124	988	124	195	44	363	46	107	15	168	251	615	110	976
8:00 AM	283	442	127	852	152	227	67	446	58	185	34	277	291	540	143	974
9:00 AM	248	464	133	845	201	293	93	587	115	256	47	418	242	405	114	761
10:00 AM	216	263	93	572	226	348	116	690	137	293	69	499	207	275	93	575
11:00 AM	212	240	91	543	253	407	143	803	160	340	93	593	213	235	105	553
12:00 PM	224	256	130	610	263	365	130	758	213	345	113	671	208	249	97	554
1:00 PM	253	252	99	604	280	330	114	724	243	339	108	690	259	254	96	609
2:00 PM	338	348	168	854	300	286	115	701	278	315	82	675	262	269	145	676
3:00 PM	369	337	249	955	311	296	125	732	270	226	76	572	349	283	257	889
4:00 PM	446	325	221	992	290	311	95	696	284	218	92	594	467	359	234	1060
5:00 PM	490	338	226	1054	277	302	107	686	252	232	69	553	490	346	216	1052
6:00 PM	361	266	120	747	242	230	90	562	220	175	76	471	448	241	132	821
7:00 PM	268	182	74	524	232	212	75	519	151	139	58	348	257	178	84	519
8:00 PM	144	119	69	332	159	110	89	358	166	131	50	347	182	125	89	396
9:00 PM	128	73	39	240	143	84	61	288	105	66	30	201	145	100	70	315
10:00 PM	122	107	49	278	144	99	39	282	69	19	22	110	95	59	33	187
11:00 PM	108	74	33	215	115	76	42	233	50	30	10	90	62	38	10	110
Total	4737	5165	2156	12058	3971	4419	1623	10013	3073	3676	1106	7855	4689	5038	2114	11841

WEEKEND PEAK 15 MINUTE COUNTS

PROJECT	Patterson Crossing Retail Centre	TIM MILLER ASSOCIATES, INC.
LOCATION	NYS Route 311 and Fair Street #10	
DATE	Tuesday, November 28, 2006	
TIME	4:45 p.m. to 7:00 p.m.	Table I-7

15 Minute Traffic

START TIME	END TIME	NYS Route 311 EB Left	Thru 1	Right 2	Total	Fair Street NB Left 3	Thru	Right 4	Total	NYS Route 311 WB Left 5	Thru 6	Right	Total	Left	Thru	Right	Total	ALL TOTAL
04:45 PM	05:00 PM		71	17	88	16		35	51	18	72		90					229
05:00 PM	**05:15 PM**		**92**	**17**	**109**	**24**		**37**	**61**	**19**	**63**		**82**					252
05:15 PM	**05:30 PM**		**93**	**18**	**111**	**20**		**42**	**62**	**17**	**60**		**77**					250
05:30 PM	**05:45 PM**		**109**	**15**	**124**	**9**		**36**	**45**	**17**	**66**		**83**					252
05:45 PM	**06:00 PM**		**98**	**19**	**117**	**9**		**38**	**47**	**15**	**58**		**73**					237
06:00 PM	06:15 PM		98	11	109	15		21	36	23	50		73					218
06:15 PM	06:30 PM		70	9	79	10		20	30	22	54		76					185
06:30 PM	06:45 PM		68	10	78	8		23	31	20	43		63					172
06:45 PM	07:00 PM		70	12	82	0		23	23	16	43		59					164
TOTAL			769	128	897	111		275	386	167	509		676					1959

WEEKEND PEAK HOURLY APPROACH VOLUMES

PROJECT	Patterson Crossing Retail Centre	TIM MILLER ASSOCIATES, INC.
LOCATION	NYS Route 311 and Fair Street #10	
DATE	Tuesday, November 28, 2006	
TIME	4:45 p.m. to 7:00 p.m.	Table I-8

HOURLY SUMMARY

START TIME	END TIME	NYS Route 311 EB Left	Thru 1	Right 2	Total	Fair Street NB Left 3	Thru	Right 4	Total	NYS Route 311 WB Left 5	Thru 6	Right	Total	Left	Thru	Right	Total	TOTAL
04:45 PM	05:45 PM		365	67	432	69		150	219	71	261		332					**983**
05:00 PM	**06:00 PM**		**392**	**69**	**461**	**62**		**153**	**215**	**68**	**247**		**315**					**991**
05:15 PM	06:15 PM		398	63	461	53		137	190	72	234		306					**957**
05:30 PM	06:30 PM		375	54	429	43		115	158	77	228		305					**892**
05:45 PM	06:45 PM		334	49	383	42		102	144	80	205		285					**812**
06:00 PM	07:00 PM		306	42	348	33		87	120	81	190		271					**739**
06:15 PM	07:15 PM		208	31	239	18		66	84	58	140		198					**521**
06:30 PM	07:30 PM		138	22	160	8		46	54	36	86		122					**336**
06:45 PM	07:45 PM		70	12	82	0		23	23	16	43		59					**164**
05:00 PM	**06:00 PM**		**392**	**69**	**461**	**62**		**153**	**215**	**68**	**247**		**315**					**991**
Peak 15 Minutes					**124**				**62**				**83**					
Peak Hour Factor					**0.93**				**0.87**				**0.95**					
Trucks					14				4				7					
%trucks					6%				5%				4%					

Appendix J

TRAFFIC SENSITIVITY ANALYSIS

Appendix J Traffic and Transportation Sensitivity Analysis

J.1 Introduction

The following section examines the sensitivity to volume changes of the current and future transportation analysis in the vicinity of the Patterson Crossing Retail Center.

The current operations are based on the existing transportation network and are referred to herein as the Existing Conditions. Future transportation operations are examined for the No Build (without Patterson Crossing Retail Center) and Build (with the Patterson Crossing Retail Center) Conditions. A mitigation condition is provided to further analyze transportation operations with transportation improvements that have been identified and programmed.

NYS Route 311 intersections with the site access and Interstate 84 ramps are analyzed under the Build Condition with Saturday holiday traffic. Internal site intersections for this same Saturday holiday build condition are analyzed in Appendix L. The DEIS analysis focused on intersections noted in Figure J-1.

This section includes analysis of the following:
- NYS Route 311 and Fair Street p.m. peak hour revisions,
- NYS Route 311 and NYS Route 164 p.m. peak hour revisions,
- Terry Hill Road and NYS Route 311 revised mitigation analysis, and
- NYS Route 311 with the site access and Interstate 84 ramps sensitivity analysis.

There are three attachments to this Appendix. Attachment A contains additional information on vehicle collisions. Attachment B contains additional information on trip generation for The Gateway Summit and Fairways projects. Attachment C contain the level of service calculations for:

- NYS Route 311 and Fair Street p.m. peak hour Build Condition,
- NYS Route 311 and Fair Street p.m. peak hour Build Condition with mitigation,
- NYS Route 311 and NYS Route 164 p.m. peak hour Build Condition,
- Terry Hill Road and NYS Route 311 revised mitigation Build Condition for p.m. peak hour and Saturday holiday peak hour,
- NYS Route 311 with the site access and Interstate 84 ramps Build Condition with Saturday holiday peak hour traffic
- Overall NYS Route 311 and Interstate 84 ramps interchange analysis

J.2 Measures of Effectiveness

Level of Service Criteria

The Highway Capacity Manual, the *Highway Capacity Software* procedures and *Synchro 7* software procedures document the methodology used for modeling levels of service, average vehicle delay, and volume to capacity ratios at both signalized and unsignalized intersections. Level of service is a measure of the operational quality of an intersection; level of service A is the highest, most efficient level, and level of service F is the lowest least efficient level. The operational quality of an intersection is based on the average amount of time a vehicle is delayed. Levels of service are examined by lane group, the set of lanes allowing common

movement(s) on an approach. Approaches to intersections are assigned primary directions for clarity. The intersection at NYS Route 311 and NYS Route 164 was broken into three intersections for the analysis.

All delays including startup, deceleration, and acceleration are considered in the analysis. The New York State Department of Transportation prefers use of the Highway Capacity Manual methodologies over other traffic capacity methodologies. The *Synchro 7* software uses the Highway Capacity Manual delay calculation to model coordination and actuated signal timings (Source: Trafficware Ltd., Synchro Studio 7, User Guide, Sugerland TX, 2006, page 13-48). Highway capacity methodology analysis sheets from *Synchro 7* analyses are provided in the Attachment C to Appendix J.

Table J-1 presents the levels of service criteria for unsignalized intersections. There is no minimum level of service set for unsignalized intersections.

Table J-1
Unsignalized Intersections
Level of Service Criteria

Level of Service	Average Control Delay (Seconds Per Vehicle)
A	less than or equal to 10
B	greater than 10 and less than or equal to 15
C	greater than 15 and less than or equal to 25
D	greater than 25 and less than or equal to 35
E	greater than 35 and less than or equal to 50
F	greater than 50

Source: Highway Capacity Manual, National Academy of Sciences, Transportation Research Board, National Research Council, Washington, DC, 2000.

Table J-2 presents the levels of service criteria for signalized intersections. The New York State Department of Transportation (NYS DOT) generally seeks a minimum level of service D (delay of 55 seconds or less for a signalized intersection) for all lane groups (NYS DOT Highway Design Manual page 5-92). The Highway Design Manual notes, “In some cases, it may be necessary to accept level of service E or F on individual lane groups due to unreasonable costs or impacts associated with improving the level of service.”

Table J-2 Signalized Intersections Level of Service Criteria	
Level of Service	**Average Control Delay (Seconds Per Vehicle)**
A	less than or equal to 10
B	greater than 10 and less than or equal to 20
C	greater than 20 and less than or equal to 35
D	greater than 35 and less than or equal to 55
E	greater than 55 and less than or equal to 80
F	greater than 80

Source: Highway Capacity Manual, National Academy of Sciences, Transportation Research Board, National Research Council, Washington, DC, 2000.

The software model results apply to peak hour periods only and do not represent every minute of operation. During off peak periods, which is the majority of the time, drivers typically will find operations adequate and much better than the modeled peak hour results. During peak periods the experience of individual drivers can vary, because the model calculates average delay.

Peak 15 minute traffic flows typically do not all occur in the same 15 minute period in the peak hour. The traffic model does not always account for the ability of the traffic signal to compensate for shifting traffic volumes and thus may overestimate delay. For unsignalized intersections, the model conservatively assumes peak approach volumes occur simultaneously.

Volume to Capacity Ratio

For signalized intersections, the volume to capacity ratio is an indication of the unused capacity or the ability of the intersection to process more traffic. It is possible to have a movement with a level of service A, B, C or D and be at capacity for the movement. It is also possible to have a movement with a level of service E or F with additional capacity available on the movement. The ability of an entire intersection to handle more traffic is a complex issue as traffic can be added to under capacity movements without impacting over capacity movements.

Queue Storage and Queue Length

Queue storage and queue length are measured in “vehicles” for easy comparison. In general a standard vehicle’s storage length is 25 feet which is equal to a passenger car of 19 feet plus six feet of empty storage space per vehicle. The 95th percentile projected queue lengths are also provided in "vehicles". The importance of queue storage varies widely. Inadequate right turn storage can reduce right turns on red. Inadequate turn storage can interfere with through traffic movements. Queue storage is most important where traffic can spill back into an adjacent intersection reducing capacity of the second intersection. Extended queue lengths can block driveways. Queue storage is shown for approaches where spill back to another intersection or weaving section is a concern. The queues are summarized using the

95th percentile, other percentile information is provided in Appendix J Attachment C. Highway Capacity Software does not account for the potential of reduced capacity and longer queues associated with queues exceeding lane lengths, however the *Synchro 7* analysis does examine queuing effects and other coordination issues as unused green time created by upstream intersections.

J.3 Existing Conditions

Existing Traffic NYS Route 311 intersections with Fair Street and NYS Route 164

The traffic study reviews Existing Conditions based on recent traffic counts. The existing data forms the basis of the year 2010 No Build Condition (the scenario without the proposed action) and 2010 Build Condition (the scenario with the proposed action).

NYS Route 311 and Fair Street

Based on comments received on the DEIS, a review was completed on traffic volumes for the Fair Street and NYS Route 311 intersection. Differences in volumes for NYS Route 311 between Ludingtonville Road and Fair Street were previously attributed to a variety of reasons including the presence of a park 'n' ride lot, the dates of the traffic counts, and variability in the peak hour. The peak hours at the NYS Route 311 intersections with both Fair Street and NYS Route 164 were 4:30 p.m. to 5:30 p.m., 15 to 30 minutes earlier than the rest of the network. The occurrence of the p.m. traffic peak is mainly due to commuter traffic leaving the work place.

The p.m. counts of NYS Route 311 with intersections of Ludingtonville Road and ramps of Interstate 84 were taken on Thursday, April 15, 2004. The traffic counts of NYS Route 311 intersections with Fair Street, and NYS Route 164 were taken on Thursday, July 29, 2004. The Terry Hill Road and Fair Street intersection was counted on Wednesday, March 30, 2005.

Machine counts were taken on each of the approaches to the Fair Street and Route 311 intersection as shown in Appendix I Tables I-6. Peak hour for the weekday is summarized in Table J-3 with traffic declining after the 5 p.m. to 6 p.m. peak.

Table J-3
Occurrence of Peak Traffic (NYS Route 311 and Fair Street)

	Traffic Volume			
Time	**NYS Route 311 Eastbound**	**NYS Route 311 Westbound**	**Fair Street Northbound**	**Total**
4-5 P.M. Weekday Peak Hour				
Wednesday	445	370	236	**1045**
Thursday	461	329	257	**1026**
5-6 P.M. Weekday Peak Hour				
Wednesday	500	358	250	**1108**
Thursday	475	344	257	**1076**

Source: 2006 traffic counts Appendix I Table I-6.

This data indicated that the 5 p.m. to 6 p.m. hour should be the peak hour at Fair Street and NYS Route 311 corresponding to the Ludingtonville Road and NYS Route 311 intersection. The peak hours for weekday p.m. traffic for the different intersections are shown in Table J-4.

Table J-4
Occurrence of Peak Traffic

Intersections	P.M. Weekday Peak Hour
NYS Route 311/ NYS Route 52	4:45 p.m. to 5:45 p.m.
NYS Route 311/ Terry Hill Road	4:45 p.m. to 5:45 p.m.
NYS Route 311/ Longfellow Drive	4:45 p.m. to 5:45 p.m.
NYS Route 311/ Ludington Court	5:00 p.m. to 6:00 p.m.
NYS Route 311/ Eastbound Ramp of Interstate 84	4:45 p.m. to 5:45 p.m.
NYS Route 311/ Westbound Ramp of Interstate 84	5:00 p.m. to 6:00 p.m.
NYS Route 311/ Ludingtonville Drive	5:00 p.m. to 6:00 p.m.
NYS Route 311/ Fair Street	**5:00 p.m. to 6:00 p.m.***
NYS Route 311/ NYS Route 164	**5:00 p.m. to 6:00 p.m.***
NYS Route 52/Barrett Hill Road	4:45 p.m. to 5:45 p.m.
NYS Route 52/Horse Pound Road	5:00 p.m. to 6:00 p.m.
Fair Street/ Terry Hill Road	5:00 p.m. to 6:00 p.m.

* Revised peak hour based on 2006 counts.
Peak hours from DEIS Table 4.8-6 except as noted.

The Wednesday and Thursday volumes were averaged to establish the 5 p.m. to 6 p.m. peak hour in Table J-5. A new turning movement count was taken at the Fair Street and NYS Route 311 intersection. An adjustment factor was established based on the ratio of the machine counts to corresponding movements from the turning movement count. The 5 p.m. to 6 p.m. peak hour turning movements were increased based on the approach volume from the Wednesday and Thursday counts in Table J-6.

Table J-5
Weekday P.M. Peak Hour Traffic

Approaches	5-6 P.M. Weekday Peak Hour		
	Average Wednesday and Thursday	Turning Movement Count	Adjustment Factor
NYS Route 311 Eastbound	488	461	1.11
NYS Route 311 Westbound	351	315	1.06
Fair Street Northbound	254	215	1.18

Source: 2006 counts from Tables I-6 and I-8.

Table J-6 Occurrence of Peak Traffic			
	5-6 P.M. Weekday Peak Hour		
Movement	**Tuesday Turning Movement Count**	**Adjustment factor ***	**Adjusted Existing Condition**
NYS Route 311 Eastbound Through	392	1.11	435
NYS Route 311 Eastbound Right	69	1.11	75
NYS Route 311 Westbound Through	247	1.06	262
NYS Route 311 Westbound Left	68	1.06	72
Fair Street NB Right	153	1.18	181
Fair Street NB Left	62	1.18	73
* Adjustment based on Wednesday and Thursday 24 hour link counts.			

The revised turning movements were compared to the Ludingtonville Road volumes for the shared NYS Route 311 link between them and found to differ by less than two percent as indicated on Table J-7. Thus the sensitivity analysis in using three days of count day in combination with the adjacent data from Ludingtonville Road (CR 43) and other roads indicated the original DEIS data was too high for the p.m. peak hour at NYS Route 311 intersections with Fair Street and NYS Route 164. Thus, a revised analysis for these intersections is provided.

Table J-7 Weekday P.M. Peak Hour Traffic Comparison				
Link	5-6 P.M. Weekday Peak Hour			
	West of Fair Street Based on Adjusted Volume	**East of Ludingtonville Road (CR 43) from DEIS**	**Difference Between Counts**	**Percent Difference Between Counts**
NYS Route 311 Eastbound	488	497	9	-1.8%
NYS Route 311 Westbound	335	332	3	+0.9%

Table J-8 indicate the changes in volumes at NYS Route 311 and Fair Street. The NYS Route 311 data at Fair Street was used to adjust the NYS Route 311 volumes at NYS Route 164 with corresponding reductions shown in Table J-9.

Table J-8 Change in NYS Route 311 and Fair Street Intersection Traffic			
Intersections	**5-6 P.M. Weekday Peak Hour**		
	DEIS Existing Condition	**Adjusted Existing Condition**	**Reduction in Traffic**
NYS Route 311 Eastbound Through	521	435	86
NYS Route 311 Eastbound Right	130	75	55
NYS Route 311 Westbound Through	392	262	130
NYS Route 311 Westbound Left	118	72	46
Fair Street NB Right	178	181	-3*
Fair Street NB Left	87	73	14
* Negative number is a net increase in traffic.			

Table J-9 Change in NYS Route 311 and NYS Route 164 Intersection Traffic			
Intersections	**5-6 P.M. Weekday Peak Hour**		
	DEIS Existing Condition	**Adjusted Existing Condition**	**Reduction in Traffic**
NYS Route 311 Eastbound Left	564	493	71
NYS Route 311 Eastbound Through	140	123	17
NYS Route 164 Westbound Right	63	63	0
NYS Route 164 Westbound Through	126	86	40
NYS Route 311 Southbound Right	369	248	121
NYS Route 311 Southbound Left	71	71	0

Figure J-2 shows the revised p.m. weekday Existing Condition volumes. Figure J-3 Existing Saturday peak hour traffic is unchanged from the DEIS. Traffic volumes were calculated for the No Build and Build Conditions to examine the effects of the volume changes identified above.

J.4 Future Conditions Without the Project

No Build Condition Traffic

Typically a project's traffic impact is determined by comparing future traffic conditions without the project's traffic (2010 No-Build Conditions) to the traffic conditions with project-generated traffic (2010 Build Conditions).

The No-Build Condition is an interim scenario that establishes a future baseline condition. No-Build Conditions are ascertained based on a number of factors: (1) improvements in the local road network that are planned or underway; (2) traffic from general population growth in the local area; and (3) traffic from identified development projects in the vicinity of project site.

The development projects which are pending before the Planning Boards or are approved (but not yet built) that are included in this traffic analysis are listed in Tables J-10 and J-11.

Numerous project that were incorporated in the analysis presented in the DEIS are either no longer applicable, have been reduced in scope, or are shown with altered land uses. Revised trip generation rates and trips are shown in Tables J-12 and J-13 respectively. No Build condition traffic volumes are shown in Figures J-4 (p.m. peak hour) and J-5 (Saturday peak hour).

Table J-10
Approved or Pending Projects in the Towns of Carmel and Kent

	Project Size, Type, Town of Carmel	Status in DEIS	Status Change May 2007
1	Michael Glen's, 23 single family residential units	Pending	Under construction in 2007
2	Watson Labs expansion of 99,000 square feet from 111,400 to 210,400 square feet	Pending**	**Approval lapsed *** **
3	RPK Precision homes, 66 senior housing units	Pending**	Pending with approval for 7 lots
4	Carmel Corporate 388 senior housing units non-residential 6,400 square feet	Approved	
5	686 Stoneleigh Avenue Existing 4,930 square feet 2,100 square foot expansion to 7,030 square feet medical office	Pending	
6	Springside 22 unit multi-family residential	Pending	Under construction
7	Hillcrest Commons ** 150 senior attached units {250} 58,960 square feet office	Pending	Approved for only 150 senior residential units **(Office space not approved ***)**
8	Bank with Drive thru (3,200 square feet)	Occupied	
9	Putnam Plaza supermarket and Retail Space 31,000 square feet	Approved and Vacant	Supermarket under construction retail is vacant
10	Gateway Summit ** Hotel 150 rooms, Conference Center, Banquet Facility, Quality Restaurant 7,000 square feet, Auto Dealership 45,000 square feet, Office Space 17,600 square feet, Convenience Store 400 Square feet Senior Residences, 191 dwelling units Recreational Community Center 68,000 square feet	Pending	** Approved with Modified use: Hotel 150 rooms, Conference Center and Banquet Facility, Quality Restaurant 7,600 square feet, Pharmacy 15,000 square feet, Senior Residences, 150 units Office Space 6,000 square feet, and Recreational Community Center 68,000 square feet
11	Fairways Senior Residences, 150 dwelling units**	Pending	Approved
	Project, Size, and Type (Town of Kent)		
12	Barret Hill Subdivision, 19 single family residential units	Pending***	**Application stale *** **
13	"Super A" Petroleum (12 fueling station with car wash)	Pending***	**Application stale *** **
14	Pondview Town House, 44 single family residence (partly in Carmel)	Pending	
15	Kent Manor, 303 town houses**	Under review by NYC DEP	Reduced to 273 units NYC DEP approved SEQRA
16	Kent Self Storage Project, 2 story 16,000 sq. ft	Approved*	Occupied
17	Chestnut Petroleum, 2,440 square feet convenient and 2400 square feet retail	Approved	**Approval lapsed *** **
18	Sicuranza Site Plan 6,527 square feet retail building	Pending	
19	Bottlegate Farm 2 barns 16,260 square feet Third building 2,900 square feet office and storage space	Approved	
20	Town Complex 44,000 square feet	Approved*	Occupied (one building removed from plans)

*Completed after existing counts. *** Is no longer in review. ****Includes 33 units in Patterson and 11 in Kent.
** This project has been reduced in scale by 27 hotel rooms and 100 square feet of office space.

Table J-11
Approved or Pending Projects in Towns of Patterson and Southeast

	Project, Size, and Type and Location	Status in DEIS	Status Change May 2007
	Town of Patterson		
21	Burdick Farms 37 single family units	Pending	
22	BICAR Site Plan 4980 square foot Contractor Yard	Withdrawn	Withdrawn **
23	Watch Tower Bible and Tract Society 172,800 square feet of Commercial and Residential including 500 dwelling units, office building Audio video Building and Maintenance building	Inactive	**Application stale ****
	Town of Southeast		
24	The *Highlands Shopping Center* (377,000 square feet) partially constructed, pending bank, Michaels, and TJ Max 60,000 square feet, 6 additional stores 14,546 square feet,	Approved*	Constructed
25	*Terravest Corporate Park* 80,000 square feet light industrial 212,000 square feet light industrial Ace Endico 60 dwelling units of senior single family residential	Approved	25 acres remains vacant
26	Campus at Fields Corners 143 Single family units	Approved	
27	Meadow at Deans Corners 103 Single Family Units	Approved	
28	Mt. Ebo 168 units of assisted living	Approved	
29	Orchard Hill LLC 200 room lodge 18 hole golf course 60 seat restaurant	Pending	

*Completed after existing counts.
** Project traffic has been removed from the No Build Condition

Table J-12
No-Build Projects Trip Generation Rates

Land Use {ITE Code} Location	Trip Generation Rates			
	P.M. Weekday Peak Hour		Saturday Peak Hour	
	In (trips/ unit)[1]	Out (trips/ unit)[1]	In (trips/ unit)[1]	Out (trips/ unit)[1]
Town of Carmel				
Watson Labs expansion of 99,000 square feet from 111,400 to 210,400 square feet {110 for Saturday only}	0.090	0.637	0.066*	0.074*
Carmel Corporate Library 6,400 square feet {590}	3.650	3.954	3.578*	3.173*
Hillcrest Commons 58,960 square feet office {710}	0.418	2.039	0.221	0.188
Gateway Summit and Fairway see Attachment B Table J-B for Total Trip Generation	---	---	---	---
Town of Patterson				
BICAR Site Plan 4980 square foot Contractor Yard {150}	0.306	0.919	0.077	0.043
Watch Tower Bible and Tract Society 172,800 square feet of Commercial and Residential including 500 dwelling units, office building, audio video building, and maintenance building	0.380 0.268	0.205 1.308	0.224 0.180	0.224 0.153
Town of Kent				
Barret Hill Subdivision, 19 single family residential units {210}	0.797	0.468	0.508	0.432
Super A Petroleum (gas station and convenience store 12 fueling positions) {945/946}	6.690	6.690	9.435	9.065
Pondview 44 single family residences {210}	0.733	0.431	0.615	0.524
Kent Manor, 273 town houses {230}	0.336	0.166	0.241	0.205
Chestnut Petroleum, gas station and convenience store {945}	0.021 2.811	0.021 2.201	0.028 2.102	0.027 2.102

[1] Units are residential dwelling units, nonresidential 1,000 square feet (sf), or gas station is fueling positions.
[2] Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.
Watson Lab a.m. and p.m. peak hours based on rates for existing use.
Expansion based on average rates.
* Average rate.
See Tables J-9 and J-10 for description of changes in No build projects.

Table J-13
Change in Trip Generation for No-Build Projects

Land Use	Trip Generation Change			
	P.M. Weekday Peak Hour		Saturday Peak Hour	
	In (trips)	Out (trips)	In (trips)	Out (trips)
Town of Carmel				
Watson Labs expansion of 99,000 square feet from 111,400 to 210,400 square feet *	-9	-62	-7	-7
Carmel Corporate no nonresidential 6,400 square feet **	-23	-25	-23	-20
Hillcrest Commons no 58,960 square feet office **	-25	-120	-13	-11
Gateway Summit and Fairways (See Attachment Table J-B for details)	-1	-26	-29	-26
Town of Patterson				
BICAR Site Plan 4980 square foot Contractor Yard *	-2	-6	-1	-1
Watch Tower Bible and Tract Society 172,800 square feet of Commercial and Residential including 500 dwelling units, office building Audio video Building and Maintenance building *	-190 -46	-103 -226	-112 -31	-112 -26
Town of Kent				
Barret Hill Subdivision, 19 single family residential units *	-15	-9	-10	-8
Super A Petroleum (gas station and convenience store 12 fueling positions) *	-60	-60	-85	-81
Pondview Town House, 44 single family residence	+16	+10	+21	+16
Kent Manor, 273 town houses **	-8	-4	-4	-4
Chestnut Petroleum, 2,440 square feet convenient and 2400 square feet retail *	-23	-19	-26	-25
Total	**-386**	**-650**	**-320**	**-305**

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.
* All trips removed.
** Change in level of use.
See Table J-11 for trip generation rates.

Revised peak hour traffic volumes for the weekday p.m. and Saturday No Build Condition are shown in Figures J-4 and J-5. These figures reflect the existing traffic plus the background traffic growth of one and half percent annually over five to six years plus other area projects. The background traffic growth was reduced for the NYS Route 311 intersections at Fair Street and NYS Route 164 in the p.m. peak hour based on changes to the existing volumes noted previously.

J.5 Future Conditions with the Project

Analysis of Site Access

Description of Site Access

The site access has been expanded to a three lane boulevard style drive. The third lane will be outbound in Kent and inbound in Patterson. The northernmost set of buildings has been reduced in size to single 2,000 square foot building and the access road has been simplified by removing the turn-around.

Potential Impacts

Build Condition Traffic

The Proposed Action includes development of a 382,560 square foot regional retail center. The retail center includes management offices and community space totally 8,220 square feet that is not leasable area and is therefore excluded from trip generation. The project trip rate is summarized in Table J-14. Access to the proposed development will be provided through a single access road off NYS Route 311. The proposed access would have a traffic signal and exclusive turn lanes into and out of the site. The second site access off of Concord Road would be for emergency use only.

The Proposed Action is expected to generate 1,496 external trips during the weekday p.m. peak hour and 2,042 external trips at the Saturday peak hour, including trips already passing the site. The trips exiting and entering the development are shown in Table J-14 and indicating a reduction of approximately five percent from the trips generated by the plan presented in the DEIS as shown in Table J-15.

Table J-14
Patterson Crossing Retail Center Trip Rate Summary

Land Uses {ITE Code}	Trips			
	P.M. Peak Hour		Saturday Peak Hour	
	IN (Trips/ Unit)	OUT (Trips/ Unit)	IN (Trips/ Units)	OUT (Trips/ Units)
Commercial Development				
Shopping Center 405,850 gross leasable square feet. DEIS {820}	1.866	2.022	2.757	2.545
Shopping Center 374,340 gross leasable square feet. FEIS {820}	1.918	2.078	2.836	2.618
Unit is 1,000 square feet for Commercial development. Trip Generation, Institute of Transportation Engineers, 7th edition, Washington, DC, 2003.				

Table J-15
Patterson Crossing Retail Center Trip Generation Summary

Land Uses	Trips					
	P.M. Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total Trips	IN (Trips)	OUT (Trips)	Total Trips
Shopping Center 405,850 gross leasable square feet DEIS {820}	757	821	1578	1119	1033	2152
Shopping Center 374,340 gross leasable square feet. FEIS {820}	718	778	1496	1062	980	2042
Reduction in trips	39	43	82	57	53	110
Percent reduction	5%	5%	5%	5%	5%	5%

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington, DC, 2003.

External trips include passby trips and non-passby trips. Passby trips are trips already passing the site on NYS Route 311 that would be attracted into the site. Passby trips would typically account for 25% of external trips. Non-passby trips come from homes, businesses, and other land uses in the vicinity of the proposed retail center or are trips diverted from a road other than NYS Route 311. The majority of diverted trips would be from Interstate 84 which has a large number of p.m. peak hour weekday commuter trips and Saturday shopping trips. As part of the Sensitivity analysis a 15% passby trip rate was used. Table J-16 shows external passby and non-passby trips.

Table J-16
Patterson Crossing Retail Center Passby Site Trips

Trip Type	Trips					
	P.M. Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)
External Trips	718	778	1496	1062	980	2042
Passby Trips (15%)	112	112	224	153	153	306
Site Non passby	606	666	1272	909	827	1736

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.

Passby traffic was reduced by ten percent and those trips were changed to diverted trips as shown in Table J-17. Table J-18 indicates the resulting trip types from Tables J-16 and J-17.

Table J-17
Patterson Crossing Retail Center Additional Diverted Trips

Trip Type	Trips					
	P.M. Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)
External Trips	718	778	1496	1062	980	2042
Additional Diverted Trips (10%)	72	78	150	106	98	204

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.

Table J-18
Patterson Crossing Retail Center Site Trips External

Trip Type	Trips					
	P.M. Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)
External Trips	718	778	1496	1062	980	2042
Additional Diverted Trips (10%)	72	78	150	106	98	204
Passby Trips (15%)	112	112	224	153	153	306
Other External Trips*	534	588	1122	803	729	1532

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.

* External Trips less additional diverted trips and passby trips.

Passby trips are based on existing traffic patterns. Diverted trips from Interstate 84 appear in the analysis to be new trips. For the purpose of the sensitivity analysis the 10 percent passby trips not attributed to NYS Route 311 were assumed diverted from Interstate 84 and thus appear as new trips from and to Interstate 84. Since trip rates are not static, it could be argued the 10 percent difference would result in fewer trips to the site however, a conservative approach is taken and these trips are included as stated above. As the 10 percent trips are assigned to the most congested part of the network, the remaining network would see a five percent reduction in traffic resulting from the reduction in the proposed square footage. As a result the levels of service outside the interchange and site access are anticipated to be better than shown in the DEIS.

The site generated trips during the weekday p.m. and Saturday holiday peak are shown in Figures J-8 and J-9. The site generated trips are added to the No Build trips (Figures J-4 and J-5) to obtain Build Condition trips (Figure J-10 and J-11) for the development. Saturday Holiday Traffic trip generation is addressed later in this section.

Build Level of Service

The five percent reduction in site traffic coupled with the reduction in No Build traffic results in reductions in traffic over the transportation network except in the vicinity of the site access and at the NYS Route 311 interchange with Interstate 84 ramps. The diverted traffic represents a reduction in traffic on the Interstate 84 bridges over NYS Route 311.

The Build Condition level of service examines locations for potential changes in mitigation. A separate seasonal analysis is provided for the site access and the NYS Route 311 and Interstate 84 ramp intersections. The seasonal analysis is broken into two segments, the NYS Route 311 intersections and the internal site intersections. Refer to FEIS Appendix L.

As discussed in the DEIS and later in this Appendix the p.m. peak hour weekday trip generation is about the same as the p.m. peak hour weekday holiday traffic and hence no seasonal adjustment has been made in examining the weekday p.m. peak hour traffic.

NYS Route 311 Intersections with Fair Street and NYS Route 164

The mitigations presented in the DEIS were based on the p.m. peak hour traffic. The traffic in the p.m. peak hour has been revised (see Section J-3).

The DEIS analysis indicated the p.m. peak hour had the highest volumes for the NYS Route 311 intersections with NYS Route 164 and Fair Street as shown in Table J-19. Table J-20 indicates the changes in the turning movement volumes for NYS Route 311 at Fair Street. The future condition traffic is reduced in Table J-21 based on the Existing Condition traffic reduction, a reduction in background growth, a reduction in site traffic, and a reduction based on changes to the No Build projects. Table J-22 shows the revised level of service for the p.m. peak hour. The Saturday peak hour was level of service D without mitigation before considering the site traffic reduction and No Build project reduction and thus is not a concern in determining the mitigation. A revised mitigation plan for this intersection proposes a wide turning radius for right turning vehicles (see Appendix K Figure K-2) and not the previously proposed signal and right turn lane. Capacity calculations are provided in Appendix J Attachment C.

Table J-19 (From DEIS Table 4.8-10)
Existing Level of Service Summary in Town of Patterson

Intersection Roads	Lane Group (Approach Direction Movement)	P.M. Weekday Peak Hour V/C Ratio	P.M. Weekday Peak Hour 95th % Queue (Veh.)	P.M. Weekday Peak Hour Delay (secs./ vehicle)	P.M. Weekday Peak Hour LOS	Saturday Peak Hour V/C Ratio	Saturday Peak Hour 95th % Queue (Veh.)	Saturday Peak Hour Delay (secs./ vehicle)	Saturday Peak Hour LOS
NYS Route 311 and Fair Street									
NYS Route 311	*WB - L, T*	*0.14*	*0.48*	*9.5*	*A*	*0.10*	*0.33*	*8.2*	*A*
Fair Street	*NB - L, R*	*1.07*	*12.05*	*112.5*	*F*	*0.37*	*1.70*	*15.3*	*C*
NYS Route 311 and NYS Route 164 west									
NYS Route 164	*NB - L, R*	*0.58*	*3.29*	*40.8*	*E*	*0.17*	*0.61*	*15.0*	*B*

LOS is Level of Service (see Table J-1 for level-of-service criteria).

V/C is Volume to Capacity Ratio

95th % Queue (Veh.) is the 95th percentile queue length in vehicles.

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.

L = left, R = right, T = through,
T,R = through and right, {e.g. WB-L (1)= Westbound left with storage for one vehicle}.

Unsignalized intersections are shown in Italics.

Table J-20
Change in Weekday P.M. Peak Hour Traffic at NYS Route 311 and Fair Street

Movements	Change in Traffic from 2006 Counts *	Adjusted Background Growth **	from No Build Projects	from reduction in project size ***	Net from DEIS Build Condition
NYS Route 311 Eastbound Through	-86	-5	-27	-5	-123
NYS Route 311 Eastbound Right	-55	-3	-1	0	-59
NYS Route 311 Westbound Through	-130	-8	-22	-3	-163
NYS Route 311 Westbound Left	-46	-3	0	0	-49
Fair Street NB Right	+3	0	-2	0	+1
Fair Street NB Left	-14	-1	-2	-1	-18

* See Table J-8.

** Adjustment in background growth based on 1.5 % per year for four years (from 2006 to 2010)

*** Based on reduction in gross leasable square feet reducing traffic by five percent.

Table J-21
P.M. Weekday Peak Hour Build Level of Service NYS Route 311 and Fair Street

Intersection Roads	Lane Group (Approach Direction Movement)	Without Mitigation				With Flared Approach Mitigation			
		V/C Ratio	95th % Queue (Veh.)	Delay (secs./ vehicle)	LOS	V/C Ratio	95th % Queue (Veh.)	Delay (secs./ vehicle)	LOS
DEIS - NYS Route 311 and Fair Street									
NYS Route 311	*WB - L, T*	*0.18*	*0.68*	*10.6*	*B*				
Fair Street	*NB - L, R*	*1.97*	*26.45*	*	*F*				
Revised - NYS Route 311 and Fair Street									
NYS Route 311	*WB - L, T*	*0.10*	*0.33*	*9.3*	*A*	*0.10*	*0.33*	*9.3*	*A*
Fair Street	*NB - L, R*	*1.03*	*11.75*	*96.1*	*F*	*0.72*	*5.66*	*30.5*	*D*

LOS is Level of Service (see Table J-1 for level-of-service criteria).

V/C is Volume to Capacity Ratio.

95th % Queue (Veh.) is the 95th percentile queue length in vehicles.

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.

L = left, R = right, T = through, {e.g. WB-L (1)= Westbound left with storage for one vehicle}.

* measure of effectiveness with either V/C greater than 2, queue greater than 30, or delay exceeds 120 seconds.

[1] Not analyzed in the DEIS.

NYS Route 311 and NYS Route 164

Based on comments received from the DEIS a review was completed on traffic volumes for the Route NYS 311 intersections with Fair Street as described above and with NYS Route 164 as described below. This analysis is based on revision of the data.

Table J-22
NYS Route 311 and NYS Route 164 Change in P.M. Peak Hour Traffic

Movements	Change in Traffic				
	From 2006 Counts *	Adjusted Background Growth **	From No Build Projects	From reduction in project size ***	Net Change from DEIS Build Condition
NYS Route 311 Eastbound Left	-71	-4	-8	-3	-84
NYS Route 311 Eastbound Through	-17	-1	-18	-2	-38
NYS Route 164 Westbound Right	0	0	-3	0	-3
NYS Route 164 Westbound Through	-40	-2	-14	-1	-57
NYS Route 311 Southbound Right	-121	-7	-8	-2	-138
NYS Route 311 Southbound Left	0	0	-3	0	-3

* See Appendix I.
** Adjustment in Background growth based on 1.5 % per year for four years (from 2006 to 2010)
*** Based on reduction in the proposed gross leasable square footage

Table J-23
NYS Route 311 at NYS Route 164
P.M. Weekday Peak Hour Build
Level of Service

Intersection Roads	Lane Group (Approach Direction Movement)	P.M. Weekday Peak Hour			
		V/C Ratio	95th % Queue (Veh.)	Delay (secs./ vehicle)	LOS
NYS Route 311 and NYS Route 164 west (DEIS Table 4.8-26)					
NYS Route 164	*NB - L, R*	*1.24*	*11.09*	*	*F*
NYS Route 311 and NYS Route 164 west FEIS revised volumes					
NYS Route 164	*NB - L, R*	*0.58*	*3.29*	*41.1*	*E*

LOS is Level of Service (see Table J-1 for level-of-service criteria).

V/C is Volume to Capacity Ratio.

95th % Queue (Veh.) is the 95th percentile queue length in vehicles.

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.

L = left, R = right, T = through, {e.g. WB-L (1)= Westbound left with storage for one vehicle}.

* measure of effectiveness with either V/C greater than 2, queue greater than 30, or delay exceeds 120 seconds.

Terry Hill Road and NYS Route 52

A re-analysis of the Build Condition for Terry Hill Road and NYS Route 52 was conducted based on a revised mitigation (Table J-24). The revised mitigation is to provide a northbound right turn lane on Terry Hill Road, left turn lanes on NYS Route 311, and a traffic signal. This plan is shown in Appendix K Figure K-2. The revised plan indicates an acceptable level of service can be provided with this alternative layout for the p.m. peak hour. The Saturday peak hour is shown in the following pages with higher seasonal traffic from the site.

Table J-24
P.M. Weekday Level of Service NYS Route 311 at Terry Hill Road

Intersection Roads	Lane Group (Approach Direction Movement)	P.M. Build with Improvements Peak Hour V/C Ratio	95th % Queue (Veh.)	Delay (secs./ vehicle)	LOS
NYS Route 311 and Terry Hill Road					
NYS Route 311	EB - L	0.01	0.1	5.8	A
	EB - T, R	0.57	20.3	9.9	A
NYS Route 311	WB - L	0.55	7.3	10.8	B
	WB - T, R	0.56	20.5	9.7	A
Terry Hill Road	NB - L, T	0.43	7.6	33.1	C
	NB - R	0.39	7.4	32.6	C
North Terry Hill Road	SB - L, T, R	0.03	0.5	29.1	C
	Overall			13.7	B

LOS is Level of Service (see Table J-2 for level-of-service criteria).

V/C is Volume to Capacity Ratio.

95th % Queue (Veh.) is the 95th percentile queue length in vehicles.

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.

L = left, R = right, T = through, T, R = through and right, {e.g. WB-L (1)= Westbound left with storage for one vehicle}.

Seasonal Traffic

Daily shopping center trip generation is expected to be higher during the holiday shopping season. During this season many stores expand their hours. Shoppers make more use of off-peak shopping hours, choosing to shop early or late to avoid the crowds and thereby spread traffic volume out more evenly over the longer shopping period. While total shopping trips increase during this season, overall network traffic decreases according to NYS DOT season traffic data.

Table J-24 shows the ITE trip generation rates for the holiday shopping peak hours. Table J-25 compares the number of holiday peak hour trips to the typical peak hour traffic volume. Weekday p.m. peak hour volume is generally the same between non-holiday and holiday

seasons whereas the Saturday peak hour volume is about 15 percent higher during the holiday season.

Table J-25
Patterson Crossing Retail Center Project Trip Rate Summary for the Holiday Season

Land Uses {ITE Code}	Trips			
	P.M. Peak Hour		Saturday Peak Hour	
	IN (Trips/ 1000 square feet)	OUT (Trips/ 1000 square feet)	IN (Trips/ 1000 square feet)	OUT (Trips/ 1000 square feet)
Commercial Development				
Shopping Center 405,850 square feet. DEIS {820}	1.943	1.943	3.147	3.024
Shopping Center 374,340 gross leasable square feet. FEIS {820}	1.991	1.991	3.202	3.076

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington, DC, 2003.

Table J-26
Change in Holiday Patterson Crossing Retail Center Project Trip Generation Summary

Land Uses	Trips					
	P.M. Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total Trips	IN (Trips)	OUT (Trips)	Total Trips
Shopping Center 405,850 gross leasable square feet - Holiday Season DEIS	789	789	1578	1277	1227	2504
Shopping Center 374,340 gross leasable square feet. {820} - Holiday Season FEIS	745	745	1490	1199	1151	2350
Reduction in trips	44	44	88	78	76	154

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington, DC, 2003.

Table J-27
Holiday Patterson Crossing Retail Center Site Trips External

Trip Type	Trips					
	P.M. Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)
External Trips	745	745	1490	1199	1151	2350
Additional Diverted Trips (10%)	75	75	150	120	115	235
Passby (15%)	112	112	224	176	176	352
Other External Trips *	558	558	1116	903	860	1763
Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.						
* External Trips less additional diverted trips and passby trips.						

Shopping trips were distributed based on the information presented in Figure J-7. The resulting trips were indicated in Figure J-9. The capacity analysis for the NYS Route 311 intersections with the site access and ramps to Interstate 84 were conducted using *Synchro 7*. Capacity calculations are provided in Appendix J Attachment C. The Build Condition Saturday holiday traffic volumes were based on the Existing Condition from the DEIS, background traffic, No Build projects (less recently dropped projects) and the holiday Saturday site traffic.

Holiday Build Condition Level of Service

As part of the sensitivity analysis a review was undertaken of the diamond interchange and site access at NYS Route 311 under Saturday Holiday traffic conditions when the site traffic is anticipated to be the greatest. The sensitivity analysis includes the following changes:

- A reduction in No Build traffic reflecting No Build projects that are no longer pending and will not be built (Tables J-10 through J-13),
- A reduction in site traffic reflecting the reduction in leasable floor area of the Proposed Action(See Table J-15),
- A shift of 10 percent in the passby trips to trips diverted from Interstate 84 (Table J-27),
- A increase in site generated trips shifting from typical Saturday to holiday seasonal site generated trips (see Tables J-15 and J-27),
- A model and associated changes shifting from *Highway Capacity Software* to *Synchro 7* to more accurate examine signal coordination.
- A shift in emphasis from maintaining level of service D on individual lane groups of isolated intersections to a spectrum of goals including reducing queues on the NYS Route 311 link between the Interstate 84 ramps, reducing queues on the ramps, and reducing the overall network delay, and

- Overall operation of the interchange intersections based on *Highway Capacity Software* interchange ramp terminals analysis using *Synchro 7* delays.

The Saturday holiday traffic was chosen based on several factors:

- There is little difference (less than one percent) between the p.m. weekday holiday and typical peak hour site traffic (see Tables J-15 and J-26),

- The Saturday holiday site generated traffic is more than 15 percent higher than the typical Saturday site generated traffic (see Tables J-15 and J-26),

- The higher Saturday holiday period would have more diverted traffic, since the additional diverted traffic is related to the overall trip generation, and

- The DEIS overall delay and level of service was lower for the Saturday Build Condition with improvements than the p.m. weekday peak hour with improvements. (See Table J-30).

Table J- 28 (DEIS Table 4.8-30)
Build with Improvements Level of Service Summary in Town of Patterson

Intersection Roads	Lane Group (Approach Direction Movement)	P.M. Weekday Peak Hour V/C Ratio	95th % Queue (Veh.)	Delay (secs./ vehicle)	LOS	Saturday Peak Hour V/C Ratio	95th % Queue (Veh.)	Delay (secs./ vehicle)	LOS
NYS Route 311 and Interstate 84 eastbound ramp									
NYS Route 311	EB - T	0.81	20.5	20.6	C	0.80	16.2	25.8	C*
	EB - R (12)	0.62	11.8	14.4	B*	0.94	19.7	45.0	D*
NYS Route 311	WB - L (3)	0.17	1.3	12.2	B*	0.24	2.5	10.7	B*
	WB - T	0.75	8.7	3.9	A	0.76	8.9	4.1	A
Interstate 84 EB ramp	SB - L, T (8)	0.44	5.1	21.9	C	0.36	4.3	20.5	C
	SB - R (16)	0.84	11.3	40.1	D*	0.89	13.4	45.1	D*
	Overall			15.6	B			23.0	C*
NYS Route 311 and Interstate 84 westbound ramp									
NYS Route 311	EB - L (8)	0.75	8.0	23.0	C*	0.55	6.3	19.0	B
	EB - T	0.53	7.6	7.6	A	0.47	7.7	9.3	A
NYS Route 311	WB - T	0.93	15.8	51.8	D*	0.92	17.4	45.2	D*
	WB - R (12)	0.65	7.5	25.7	C	0.28	3.3	18.5	B
Interstate 84 WB ramp	NB - L (30)	0.90	23.9	29.7	C*	0.95	25.0	43.3	D*
	NB - T, R (10)	0.45	7.9	13.1	B	0.21	3.0	13.2	B
	Overall			25.7	C*			30.1	C*
NYS Route 311 and Site Access									
NYS Route 311	EB - T	0.84	16.6	30.4	C	0.89	14.4	44.3	D
	EB - R (8)	0.31	4.9	6.1	A	0.62	11.9	11.8	B
NYS Route 311	WB - L (20)	0.80	12.4	22.1	C	0.92	19.2	22.7	C
	WB - T	0.53	12.7	7.0	A	0.25	2.7	2.9	A
Site Access	NB - L (40)	0.83	12.70	36.6	D	0.90	14.90	46.0	D
	NB - R (12)	0.68	14.9	12.7	B	0.76	19.0	12.0	B
	Overall			18.4	B			21.8	C

See Table J-2 for level of service criteria.

V/C is Volume to Capacity Ratio.

95th % Queue (Veh.) is the 95th percentile queue length in vehicles.

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.

L = left, R = right, T = through, {e.g. WB-L (1)= Westbound left with storage for one vehicle}.

* Decline in level of service from the No Build Condition with improvements.

All intersections are signalized.

The decline in No Build area projects reduces the traffic at the interchange more during the p.m. peak hour than the Saturday peak hour especially due to the elimination of office space at Hillcrest Commons.

The network analysis was limited to the NYS Route 311 intersections with the site access and Interstate 84 ramps because of the following:

- These intersections are the only intersections carrying over 30 percent of the site traffic,
- The 10 percent diverted traffic is being added to the subject intersections,
- The site access is affected by passby traffic,
- The ramp intersections are in close proximity to each other making queue management a key issue,
- The No Build project traffic reduction increases moving away from the subject intersections, and
- The reduction in the leasable space reduces site traffic throughout the rest of the network.

Between the reduction in No Build projects and the reduction in leasable floor area, typical peak hour Build Condition traffic will decline from that projected in the DEIS across most of the network.

Table J-29 shows the level of service summary for the studied intersections for the future Saturday Holiday Build Condition with the project based on Synchro analysis.

A separate analysis for the NYS Route 311 and Interstate 84 interchange was done based on methodology contained in Chapter 26 of the Highway Capacity Manual. This analysis rates the overall operation of the intersection based on travel through the intersection by all vehicles. Figure J-12 shows the possible movements through the intersection. The analysis provided in Appendix J Attachment C rates the overall operation of the interchange as level of service C for the Saturday holiday peak hour traffic. Reductions in No Build traffic and improved coordination offset the higher site generated volumes and diverted traffic.

Table J-30 shows the revised mitigation for Terry Hill Road and NYS Route 311 with Saturday holiday peak hour traffic.

Table J-29
Saturday Peak Hour Build Condition with Improvements Level of Service Summary

Intersection Roads	Lane Group (Approach Direction Movement)	DEIS Saturday Peak Hour				Holiday Saturday Peak Hour			
		V/C Ratio	95th % Queue (Veh.)	Delay (secs./ vehicle)	LOS	V/C Ratio	95th % Queue (Veh.)	Delay (secs./ vehicle)	LOS
NYS Route 311 and Interstate 84 eastbound ramp									
NYS Route 311	EB - T	0.80	16.2	25.8	C	0.90	12.6	32.8	C
	EB - R (15)	0.94	19.7	45.0	D	0.38	0.7	13.8	B
NYS Route 311	WB - L (6)	0.24	2.5	10.7	B	0.23	1.8	3.6	A
	WB - T	0.76	8.9	4.1	A	0.64	3.8	1.6	A
Interstate 84 EB ramp	SB - L, T	0.36	4.3	20.5	C	0.37	4.6	36.0	D
	SB - R (8)	0.89	13.4	45.1	D	0.61	7.5	40.5	D
	Overall			23.0	C			17.9	B
NYS Route 311 and Interstate 84 westbound ramp									
NYS Route 311	EB - L (8)	0.55	6.3	19.0	B	0.77	5.2	13.9	B
	EB - T	0.47	7.7	9.3	A	0.39	2.8	2.8	A
NYS Route 311	WB - L, T	0.92	17.4	45.2	D	0.83	14.8	49.8	D
	WB - R (10)	0.28	3.3	18.5	B	0.06	1.6	29.6	C
Interstate 84 WB ramp	NB - L	0.95	25.0	43.3	D	0.85	20.6	35.5	D
	NB - T, R (10)	0.21	3.0	13.2	B	0.07	1.2	18.1	B
	Overall			30.1	C			27.0	C
NYS Route 311 and Site Access									
NYS Route 311	EB - T	0.89	14.4	44.3	D	0.81	14.4	51.4	D
	EB - R (6)	0.62	11.9	11.8	B	0.33	4.3	34.6	C
NYS Route 311	WB - L (32)	0.92	19.2	22.7	C	0.95	29.2	39.5	D
	WB - T	0.25	2.7	2.9	A	0.24	3.4	4.4	A
Site Access	NB - L	0.90	14.90	46.0	D	0.91	15.4	66.5	E
	NB - R (20)	0.76	19.0	12.0	B	0.88	15.1	67.4	E
	Overall			21.8	C			47.6	D

See Table J-2 for level of service criteria.

V/C is Volume to Capacity Ratio.

95th % Queue (Veh.) is the 95th percentile queue length in vehicles.

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.

L = left, R = right, T = through, {e.g. WB-L (1)= Westbound left with storage for one vehicle}.

All intersections are signalized.

Table J-30
Saturday Level of Service Summary
for NYS Route 311 and Terry Hill Road Mitigation

Intersection Roads	Lane Group (Approach Direction Movement)	Holiday Saturday Build Peak Hour V/C Ratio	95th % Queue (Veh.)	Delay (secs./ vehicle)	LOS
NYS Route 311 and Terry Hill Road					
NYS Route 311	EB - L	0.01	0.1	5.8	A
	EB - T, R	0.63	24.2	10.9	A
NYS Route 311	WB - L	0.46	4.8	9.4	A
	WB - T, R	0.50	17.4	8.9	A
Terry Hill Road	NB - L, T	0.48	8.6	33.7	C
	NB - R	0.55	10.8	34.9	C
North Terry Hill Road	SB - L, T, R	0.02	0.5	29.1	C
	Overall			14.9	B

LOS is Level of Service (see Table J-2 for level-of-service criteria).

V/C is Volume to Capacity Ratio.

95th % Queue (Veh.) is the 95th percentile queue length in vehicles.

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.

L = left, R = right, T = through, T, R = through and right, {e.g. WB-L (1)= Westbound left with storage for one vehicle}.

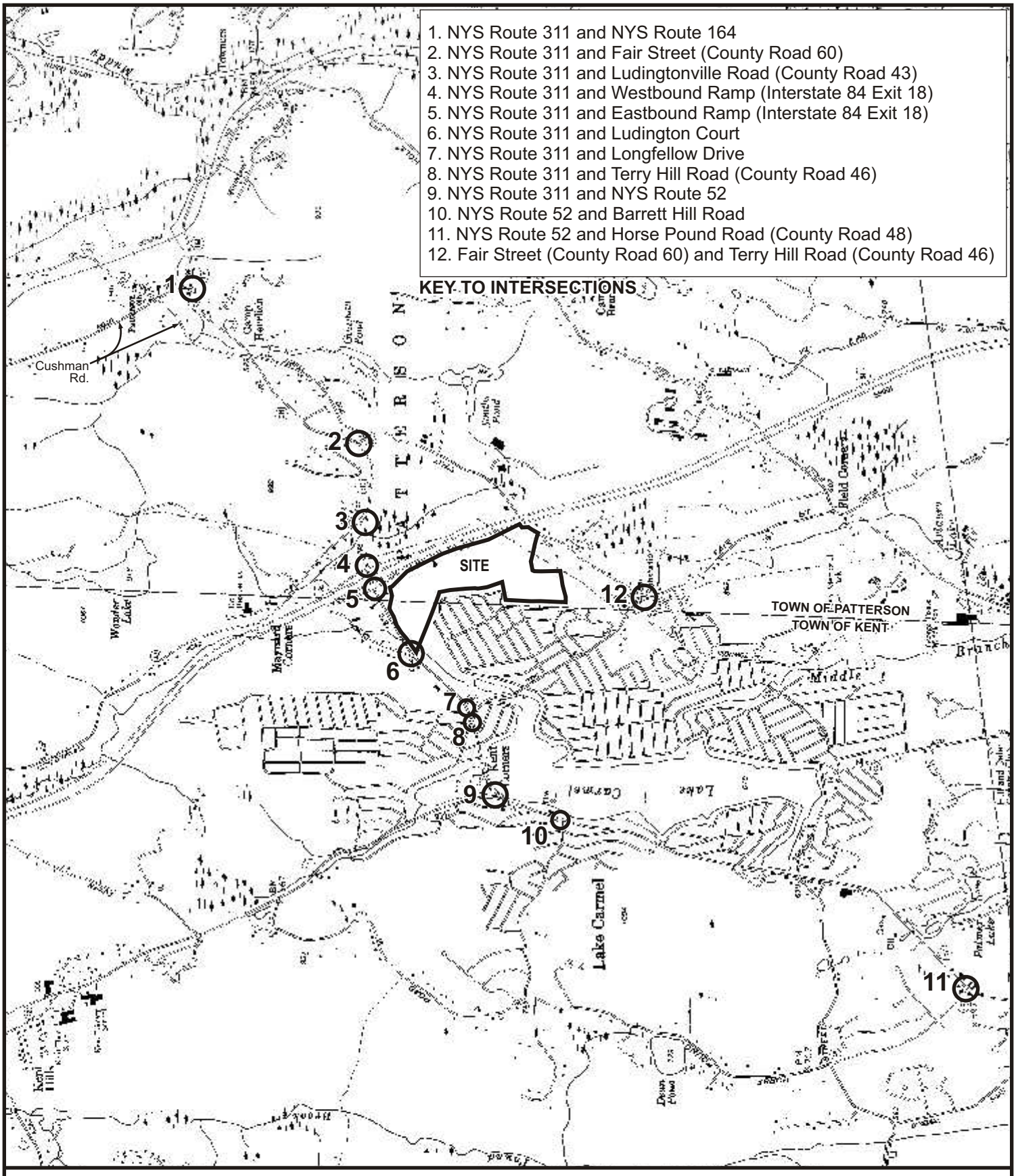


Figure J-1: Local Road Network
Patterson Crossing Retail Center FEIS
Town of Patterson, Putnam County, New York
Base Map: USDOT Planimetric Map, Lake Carmel Quad
Approx. Scale: 1" = 2,700'

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JS/04031

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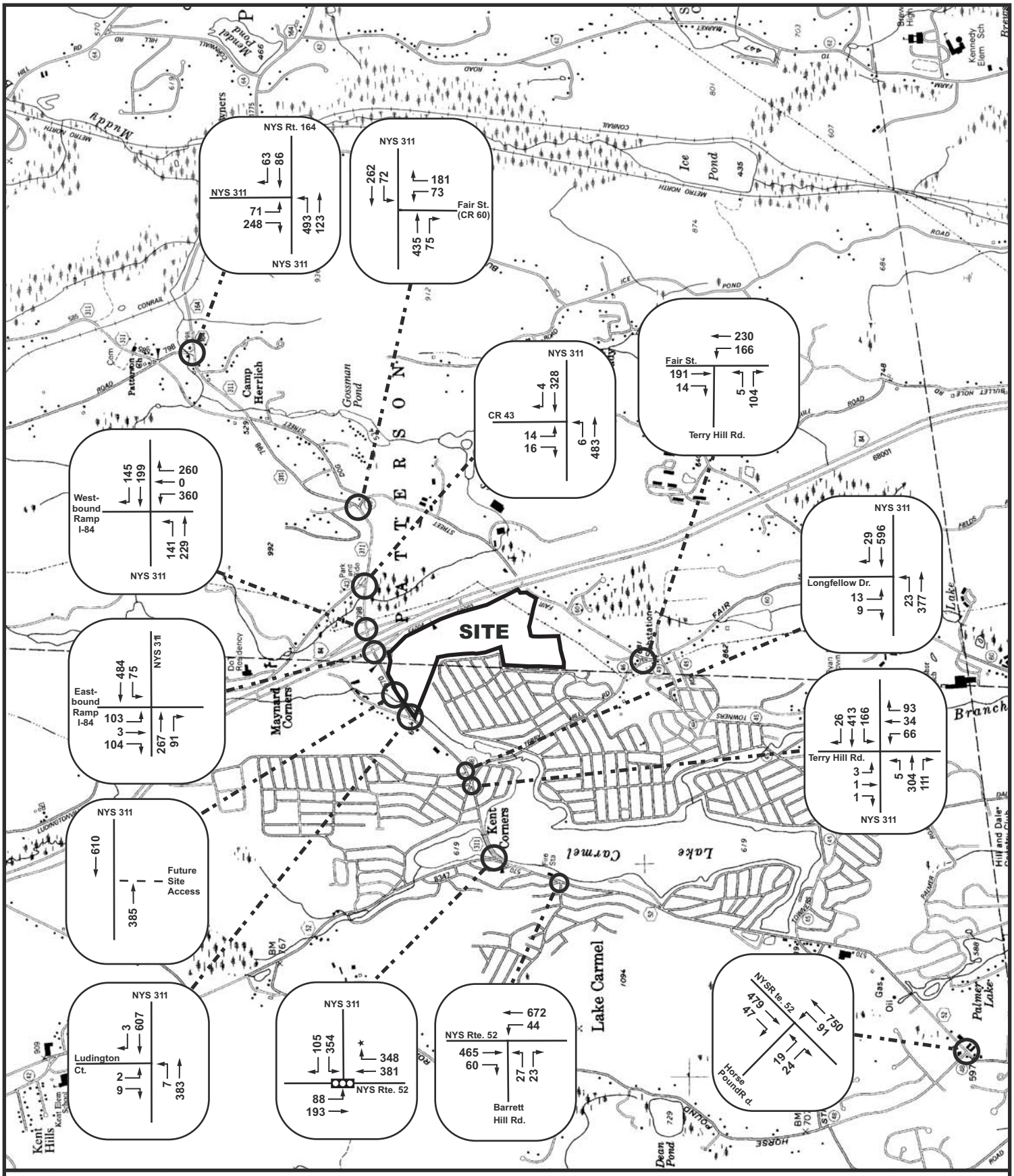

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LEGEND

- Site Property Boundary
- Intersections Studied
- Traffic Signal
- ★ Movement Controlled by Stop or Yield Sign

Figure J -2: Existing Weekday PM Peak Hour Traffic

Patterson Crossing Retail Center FEIS

Town of Patterson, Putnam County, New York

Base Map: USDOT Planimetric Map, Lake Carmel Quad

Scale: n/a

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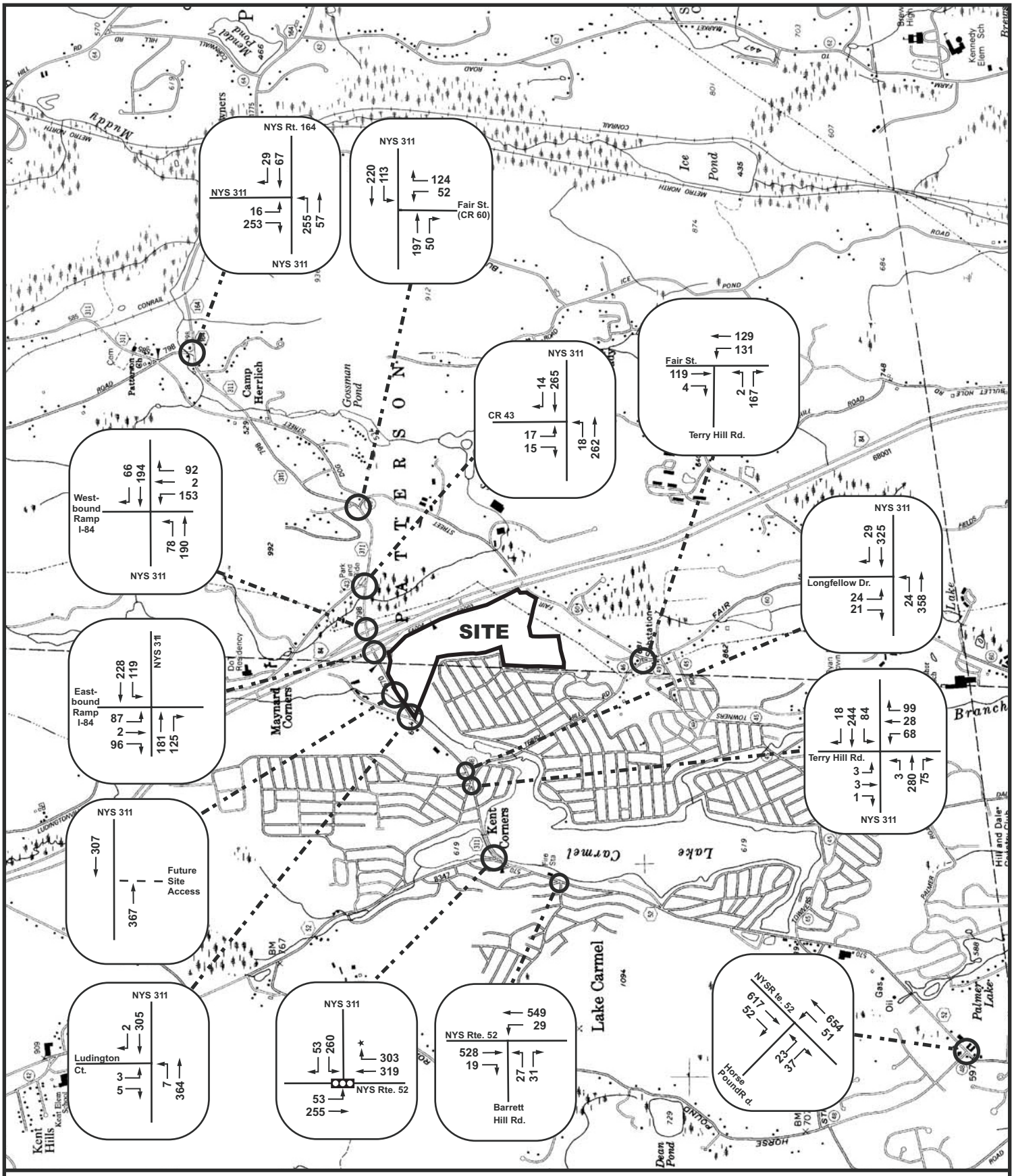

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LEGEND

- Site Property Boundary
- Intersections Studied
- Traffic Signal
- ★ Movement Controlled by Stop or Yield Sign

Figure J -3: Existing Saturday Peak Hour Traffic

Patterson Crossing Retail Center FEIS
Town of Patterson, Putnam County, New York
Base Map: USDOT Planimetric Map, Lake Carmel Quad
Scale: n/a

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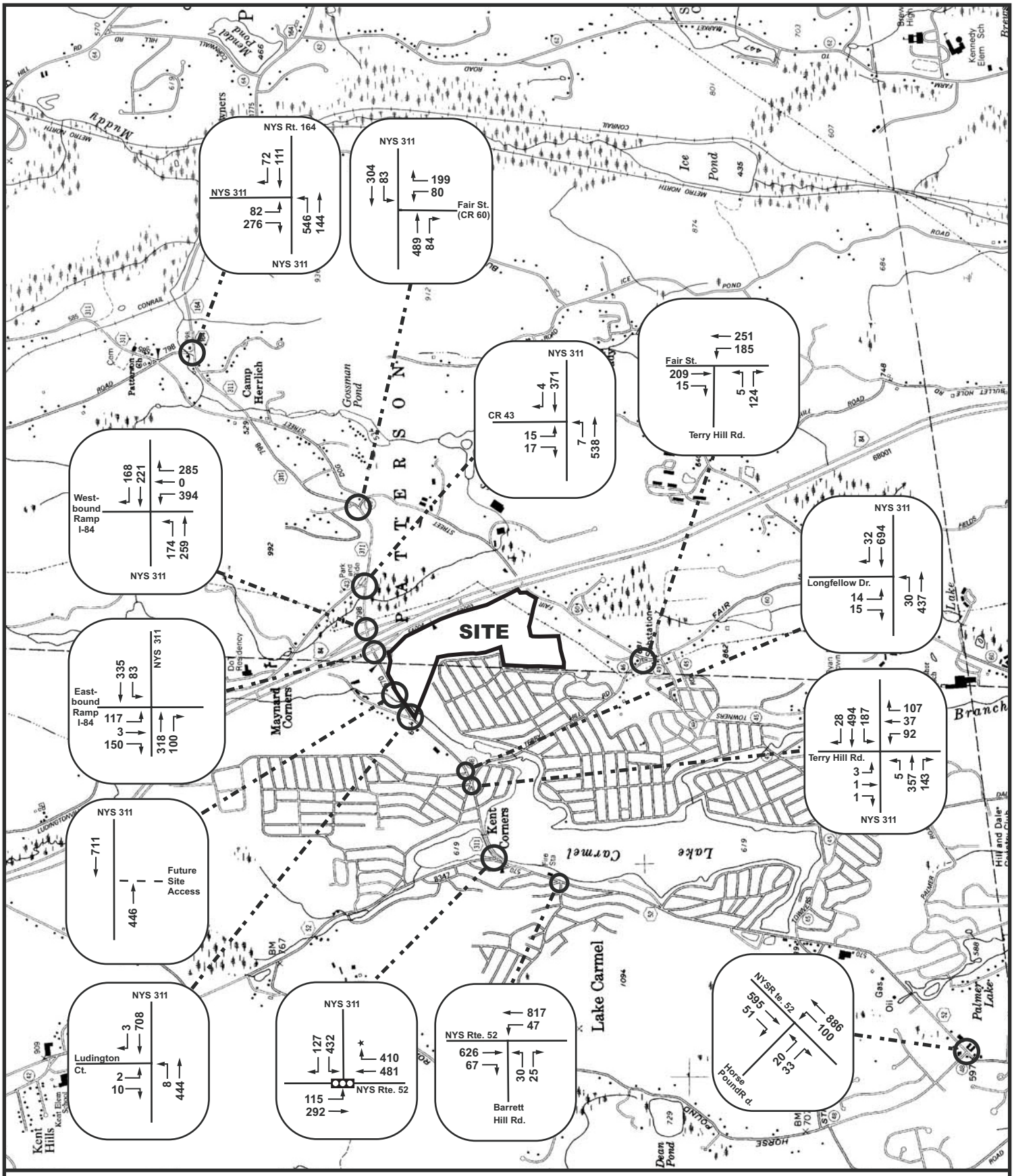

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W

LEGEND

- Site Property Boundary
- Intersections Studied
- Traffic Signal
- ★ Movement Controlled by Stop or Yield Sign

Figure J -4: PM Weekday No Build Peak Hour Traffic

Patterson Crossing Retail Center FEIS

Town of Patterson, Putnam County, New York

Base Map: USDOT Planimetric Map, Lake Carmel Quad

Scale: n/a

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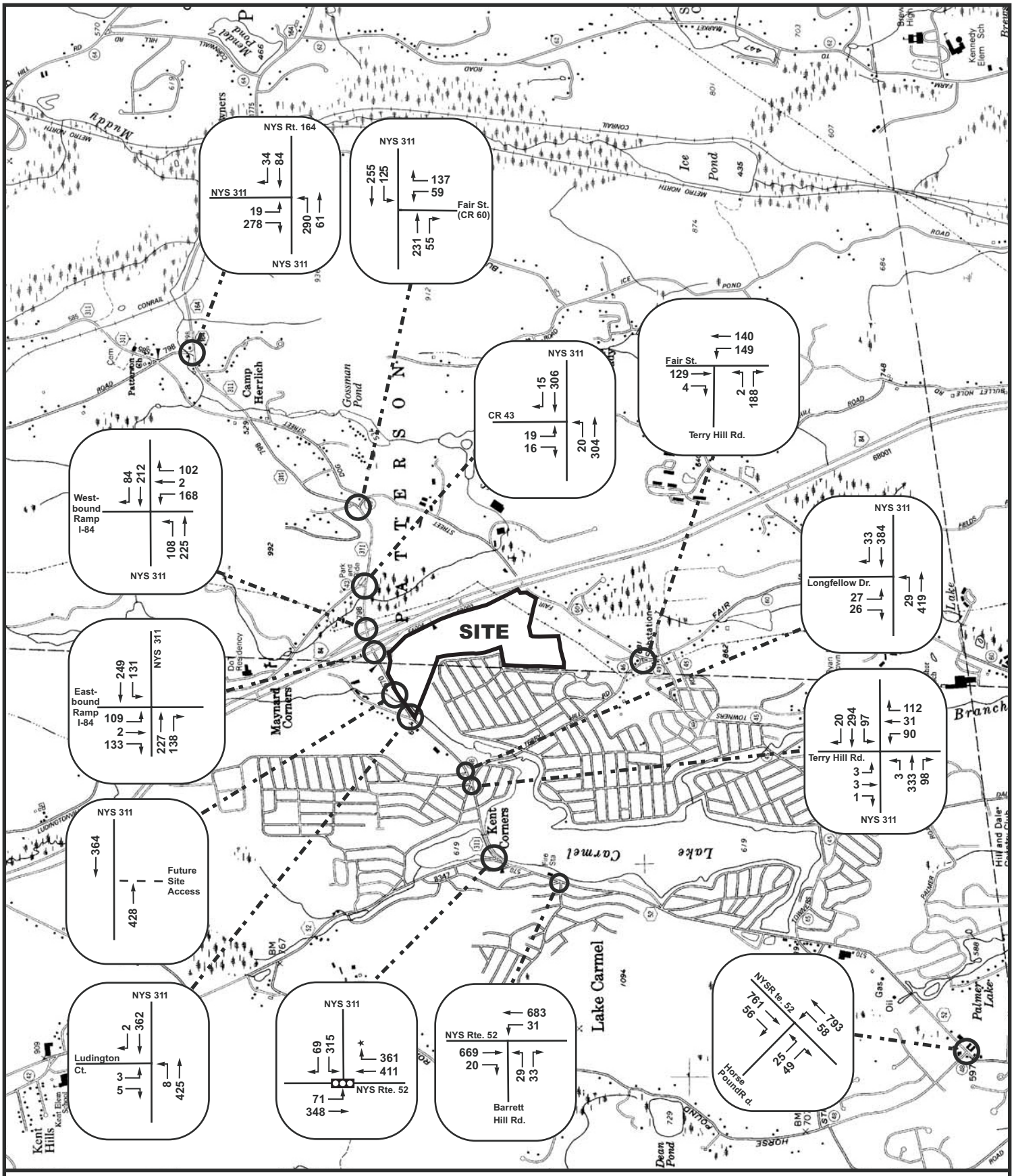

E
N S
W

LEGEND

- Site Property Boundary
- Intersections Studied
- Traffic Signal
- ★ Movement Controlled by Stop or Yield Sign

Figure J -5: Saturday No Build Peak Hour Traffic

Patterson Crossing Retail Center FEIS

Town of Patterson, Putnam County, New York

Base Map: USDOT Planimetric Map, Lake Carmel Quad

Scale: n/a

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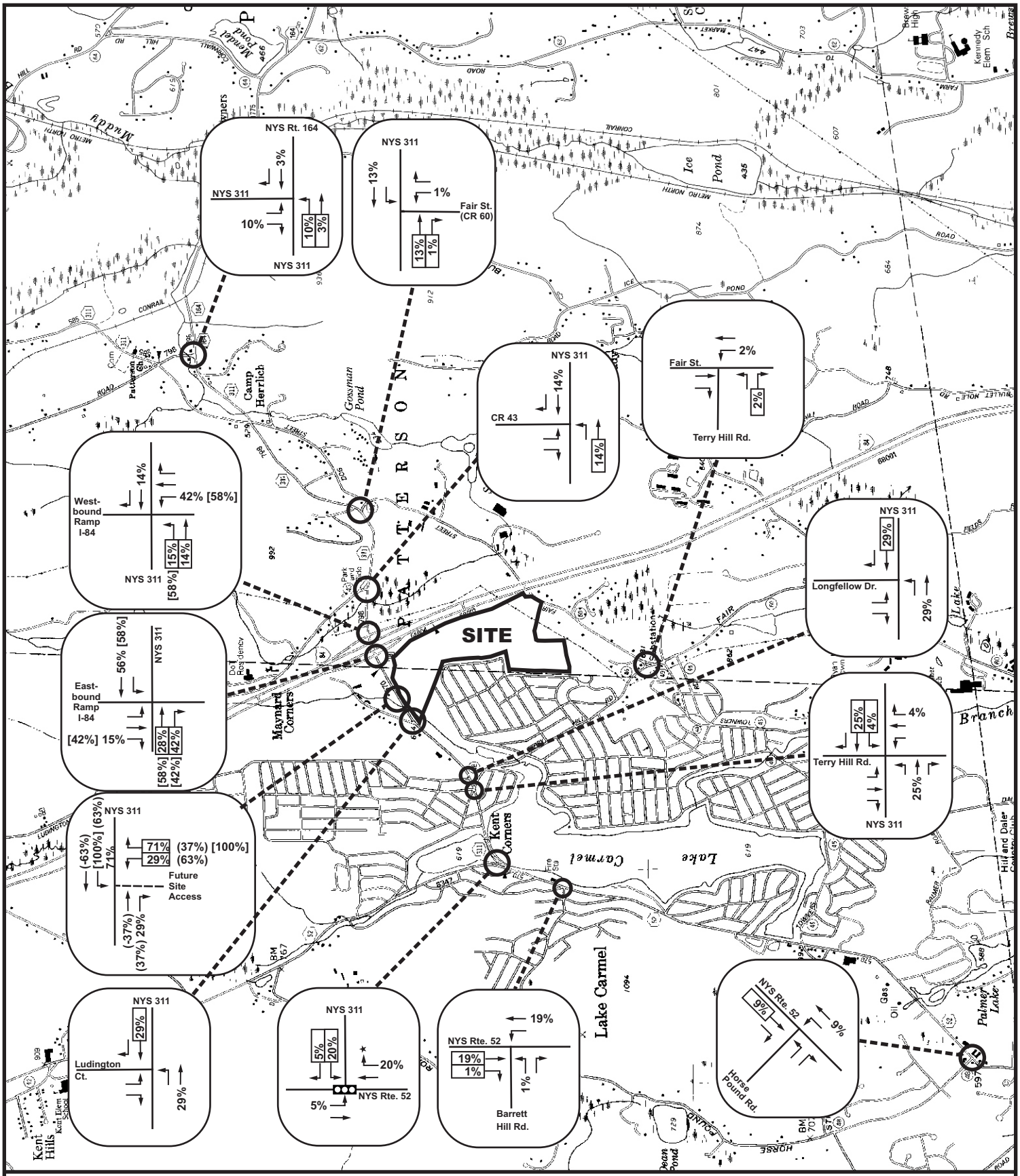

LEGEND

- Site Property Boundary
- Intersections Studied
- Traffic Signal
- ★ Movement Controlled by Stop or Yield Sign

XX Inbound
XX Outbound
(XX) Passby
[XX] Diverted I-84

Figure J-6: Percent Distribution PM Peak Hour Traffic

Patterson Crossing Retail Center FEIS
Town of Patterson, Putnam County, New York
Base Map: USDOT Planimetric Map, Lake Carmel Quad
Scale: n/a

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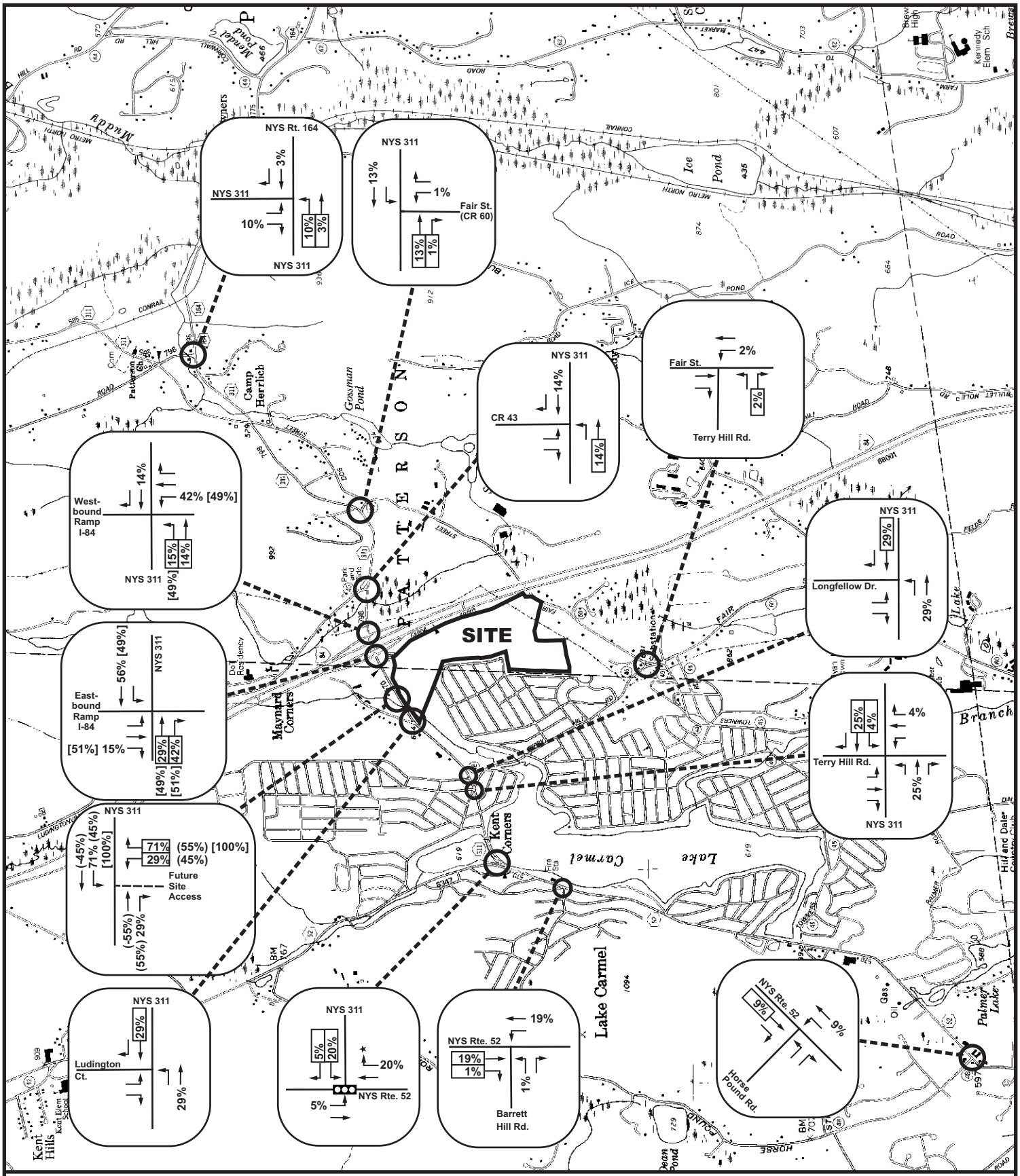

LEGEND

- Site Property Boundary
- Intersections Studied
- Traffic Signal
- ★ Movement Controlled by Stop or Yield Sign

XX Inbound
XX Outbound
(XX) Passby
[XX] Diverted I-84

E
N
S
W

Figure J-7: Percent Distribution Saturday Peak Hour Traffic

Patterson Crossing Retail Center FEIS
Town of Patterson, Putnam County, New York
Base Map: USDOT Planimetric Map, Lake Carmel Quad
Scale: n/a

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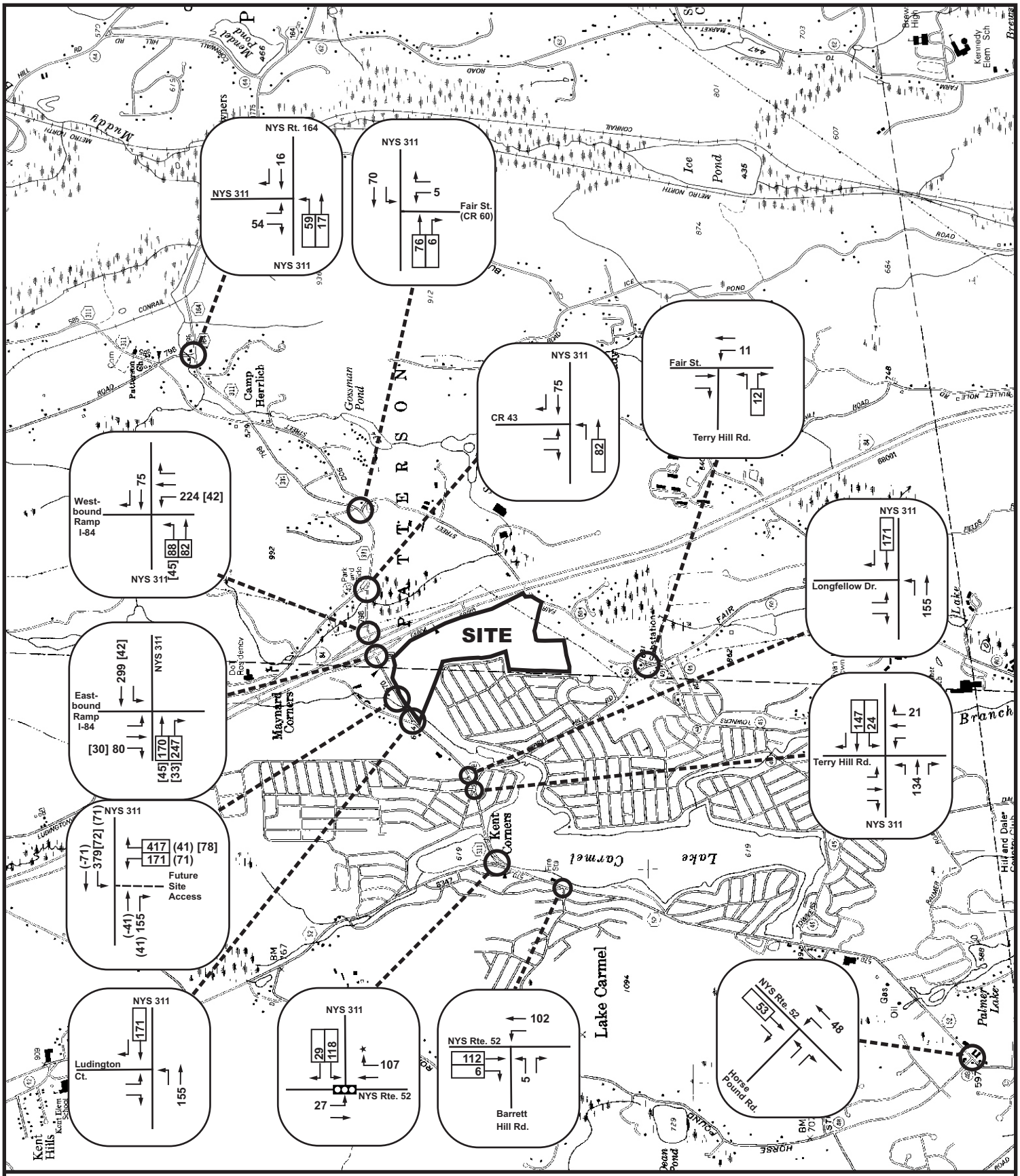

LEGEND

- Site Property Boundary
- Intersections Studied
- Traffic Signal
- ★ Movement Controlled by Stop or Yield Sign

XX Inbound
XX Outbound
(XX) Passby
[XX] Diverted I-84

E
N
S
W

Figure J-8: PM Site Generated Peak Hour Traffic

Patterson Crossing Retail Center FEIS
Town of Patterson, Putnam County, New York
Base Map: USDOT Planimetric Map, Lake Carmel Quad
Scale: n/a

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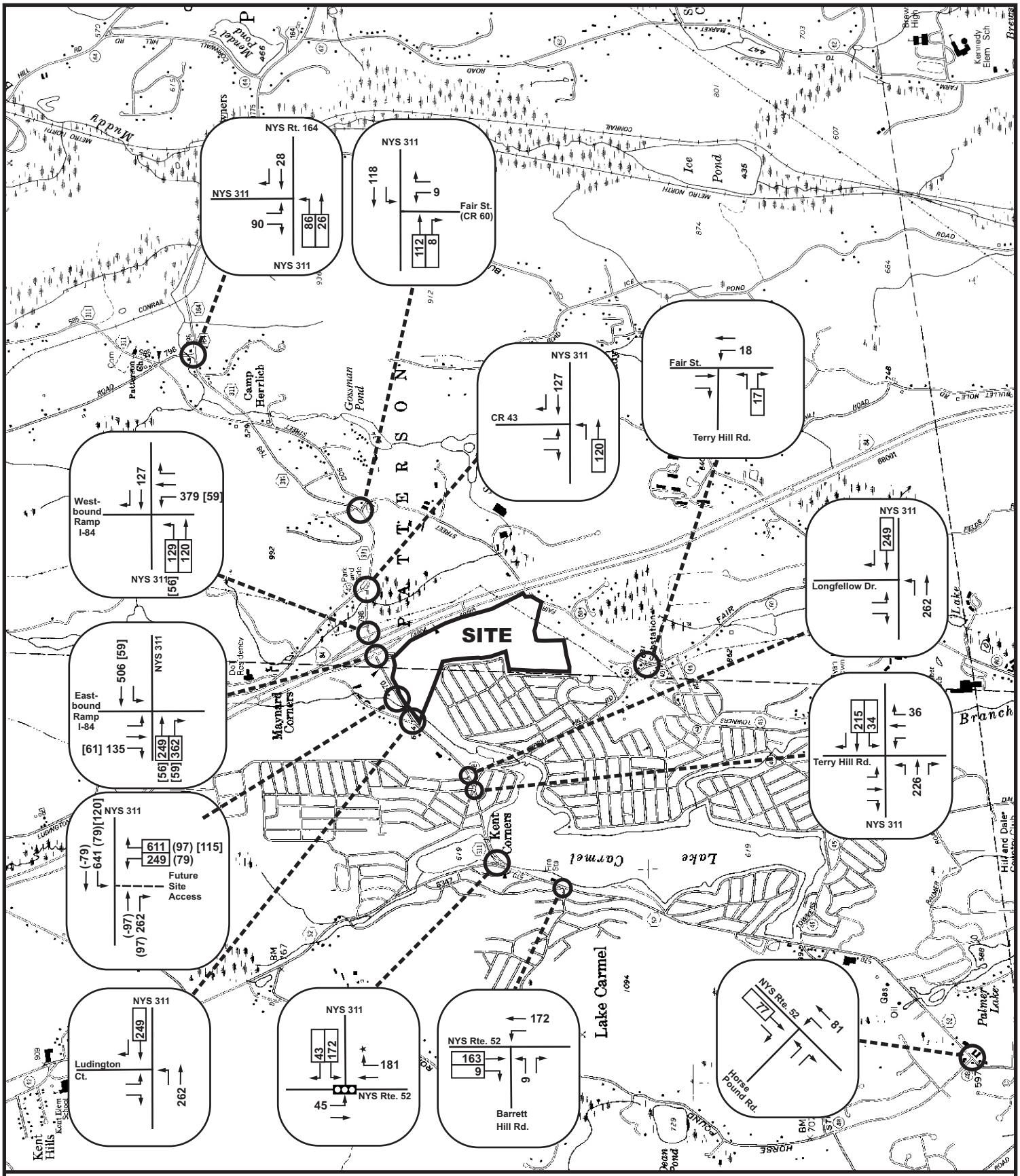

Figure J-9: Holiday Site Generated Saturday Peak Hour Traffic

Patterson Crossing Retail Center FEIS

Town of Patterson, Putnam County, New York

Base Map: USDOT Planimetric Map, Lake Carmel Quad

Scale: n/a

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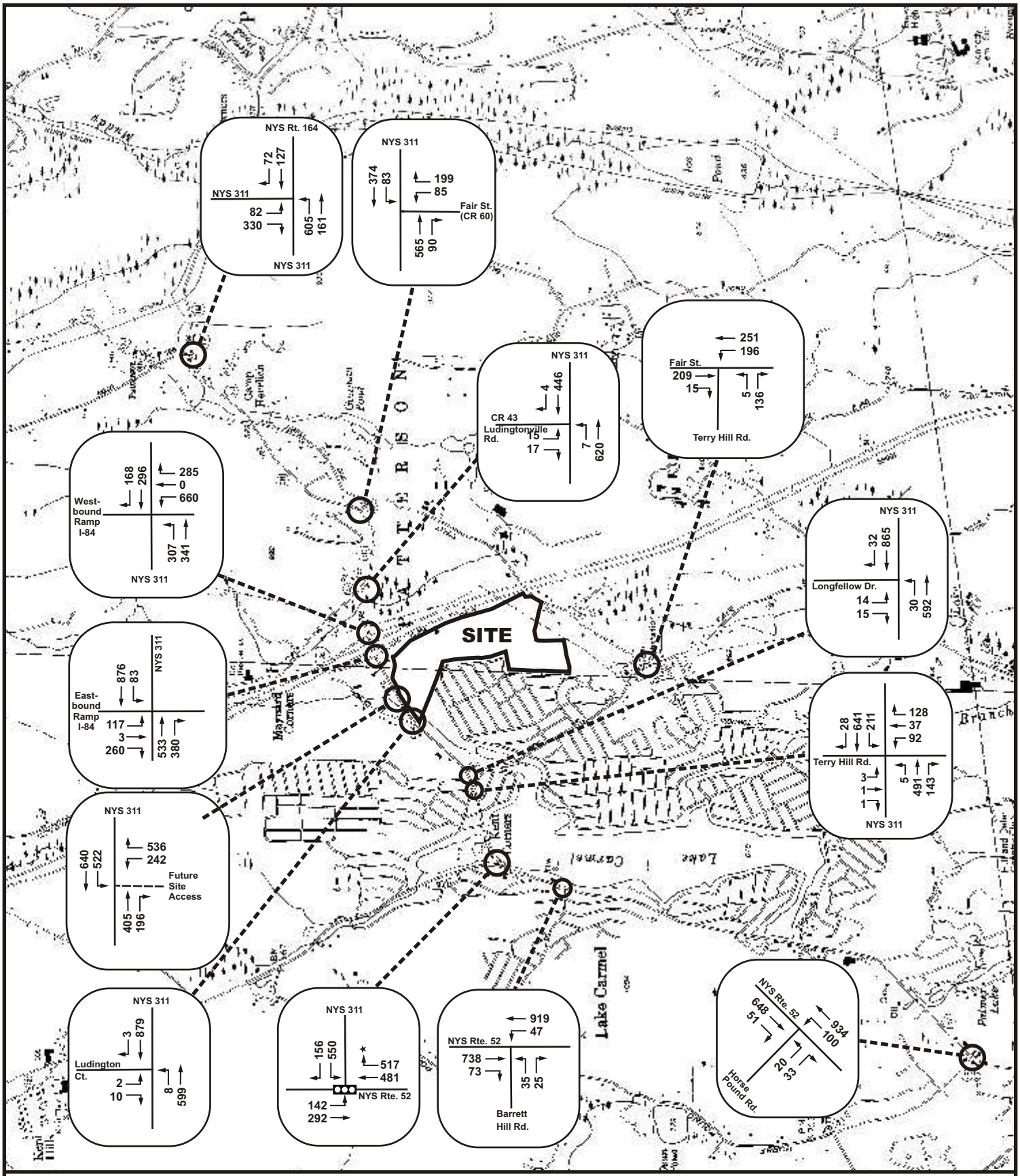

Figure J-10: P.M. Weekday Build Peak Hour Traffic

Patterson Crossing Retail Center FEIS

Town of Patterson, Putnam County, New York

Base Map: USDOT Planimetric Map, Lake Carmel Quad

Scale: n/a

File: 04031
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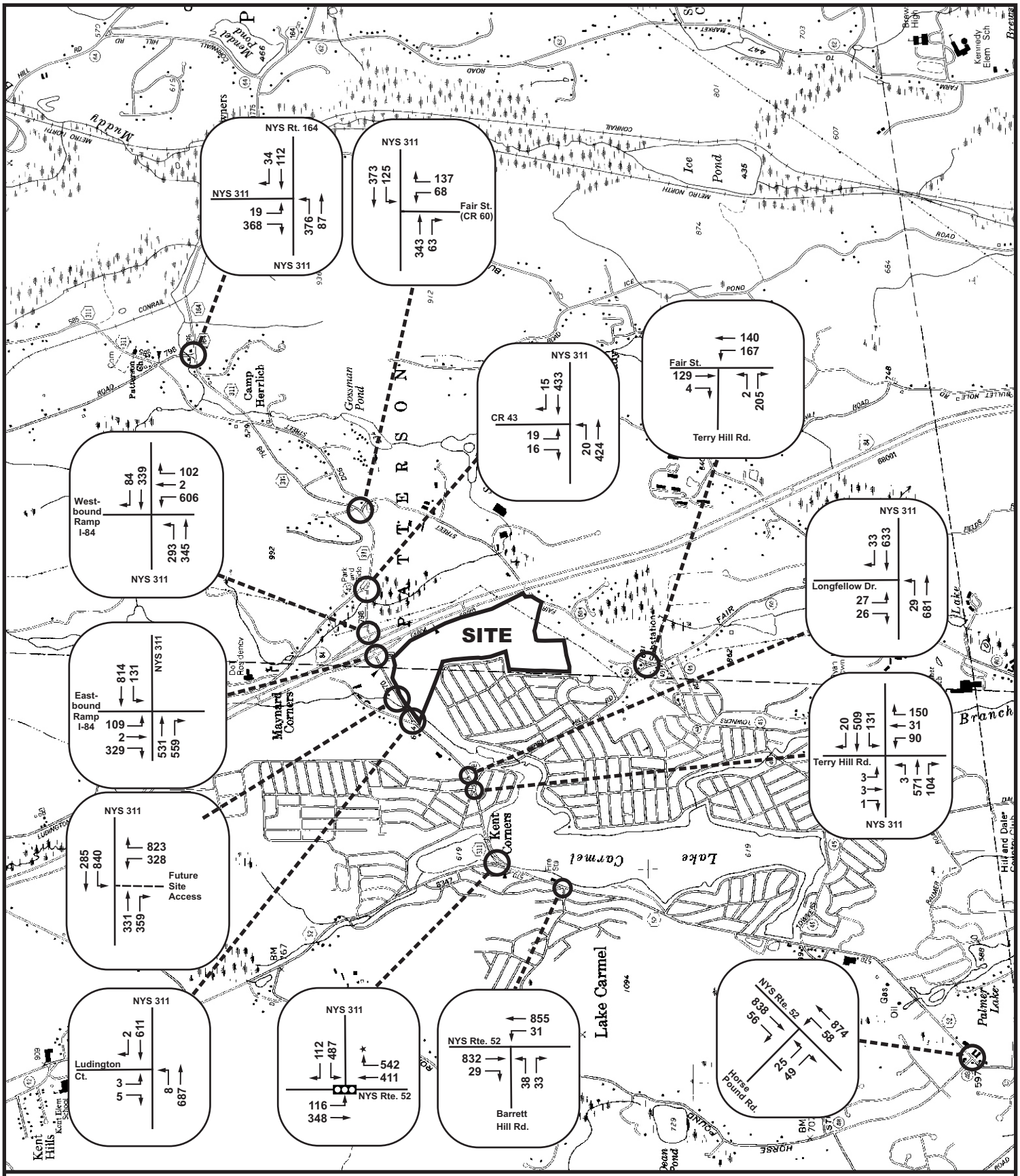

LEGEND

- Site Property Boundary
- Intersections Studied
- Traffic Signal
- ★ Movement Controlled by Stop or Yield Sign

XX Inbound
XX Outbound
(XX) Passby
[XX] Diverted

E
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S
W

Figure J-11: Holiday Saturday Build Peak Hour Traffic

Patterson Crossing Retail Center FEIS
Town of Patterson, Putnam County, New York
Base Map: USDOT Planimetric Map, Lake Carmel Quad
Scale: n/a

File 04031 05/31/07
WP3/04031/FEIS/App J

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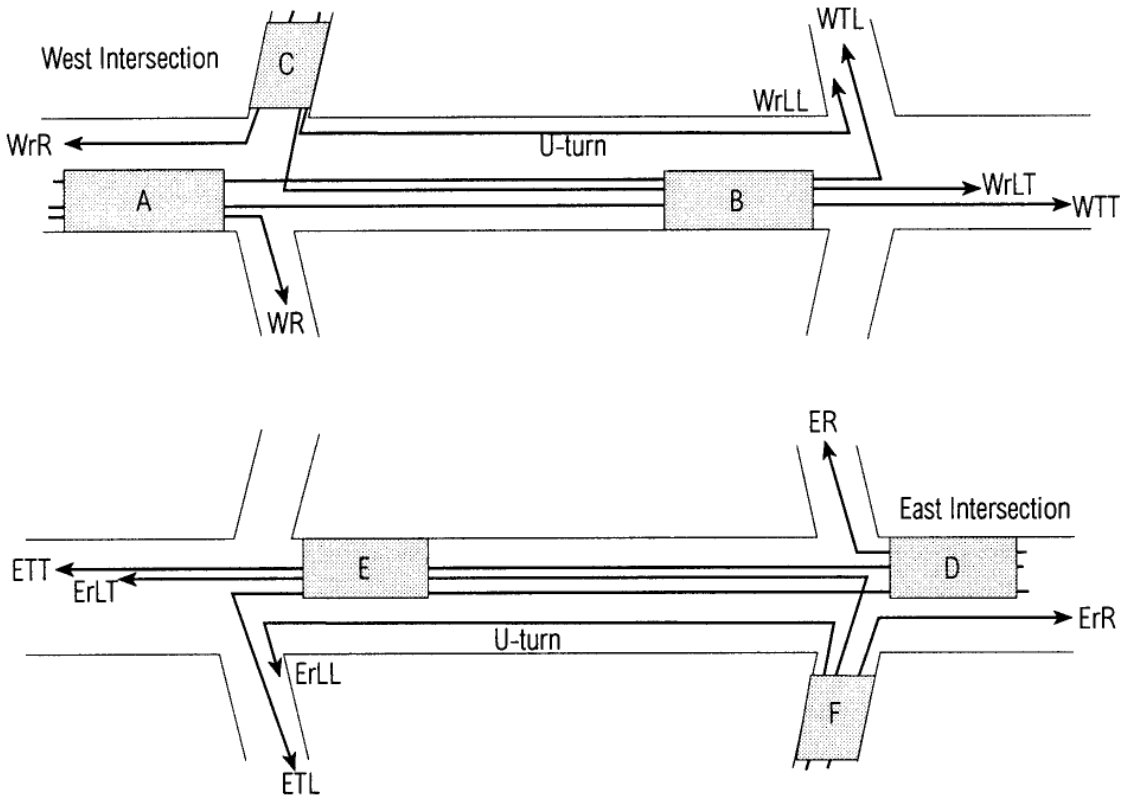

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Figure J-12: Movements in a Diamond Interchange
(NYS Route 311 and Interstate 84)
Patterson Crossing Retail Center
Town of Patterson, Putnam County, New York
Source: Highway Capacity Manual 2000

File 04031 6/05/07
JS:\04031\

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Appendix J

TRAFFIC SENSITIVITY ANALYSIS

Attachment A
Collision Data

Collision Data

Accident data is required by law to be submitted to the Department of Motor Vehicles for all collisions involving death, injury, or property damage in excess of a 1001 dollars. Other collisions do not have to be reported. For accidents involving death or injury all drivers and the police must file reports with the DMV (http://www.nysdmv.com/dmvfaqs.htm#accident).

The accident data provided by the state is a summary of accident data maintained by the Department of Motor Vehicles from all sources including the towns, County, and State law enforcement agencies and drivers.

The State of New York has been implementing a new program for recording and electronically transferring collision data. The TRaCS system (Traffic and Criminal Software) permits police and sheriff departments to electronically send collision data to the New York State Department of Motor Vehicles. This has expedited the availability of some but not all collision data. The collision data provided in the DEIS (1999 through 2002) has been supplemented by the two most recent years of incomplete collision data. Incomplete data for 2005 and 2006 is available as a result of TRaCS implementation. The data is incomplete as drivers can not directly add information on property damage collisions to the systems hence only collisions in excess of 1001 dollars are included. Not all law enforcement departments are 100 percent operational on the TRaCS system. As a result reportable non injury collision, injury collision, and fatality collision reporting is considered incomplete.

The collision data along NYS Route 311, NYS Route 52, and Fair Street were updated.

NYS Route 311

The frequency and severity of collisions at the NYS Route 311 studied intersections is given in Table J-A-1. Intersections having ten or more reportable collisions in the complete three year period (minimum average of three collisions per year) were further analyzed for factors relating to the collisions in Table J-A-2. An additional two years of data was provided. Table J-A-2 further identifies the factors defining the collisions.

Table J-A-1

NYS Route 311 Collision Frequency and Severity Over Five Years

Intersections (Mile Marker)**	Number of Collisions [2]			
	Total	**Injury**	**Property Damage Only**	**Not Reportable**
NYS Route 311 and NYS Route 52 intersection (52 8405 1035)	**7/2**	3/1	2/1	2/0
NYS Route 311 and Terry Hill Road intersection (311 8401 1003)* [1]	**14/1**	9/0	4/1	1/0
NYS Route 311 and Ludington Court (311 8401 1007)	**4/0**	2/0	0/0	2/0
NYS Route 311 and Ramps of Interstate 84 (311 8401 1011)** [1]	**17/5**	5/2	7/2	5/1
NYS Route 311 and Ludingtonville Road (311 8401 1013)	**2/2**	0/2	1/0	1/0
NYS Route 311 and Fair Street (311 8401 1016)	**3/3**	0/2	2/1	1/0
NYS Route 311 and NYS Route 164 (311 8401 1000)	**7/0**	2/0	4/0	1/0

No fatalities at any of the above intersections.

* Includes both Terry Hill Road and Longfellow Drive.

**Includes two intersections (NYS Route 311 with on and off ramps of eastbound and westbound of Interstate 84).

[1] See Table J-A-2 for details.

[2] Full data from June 1, 1999 to May 31, 2002 / Partial data January 1, 2004 to December 31, 2005.

Source: New York State Department of Transportation August 17, 2004, May 31, 2005, and June 17, 2007.

At the NYS Route 311/Terry Hill Road intersection, most of the collisions are left turn and rear end collisions. The most significant apparent factor for the rear end collisions is "Following too Close", and for the left turn collisions is "Failure to Yield Right-of-way".

Most of the collisions at the NYS Route 311 and ramps of Interstate 84 are right angle accidents. The most frequent factor contributing to collision at these intersections is "Failure to Yield Right-of-way".

New York State Route 52

Collision data were reviewed for NYS Route 52 from Horse Pound Road to NYS Route 311. Table J-A-3 shows the frequency of collisions at key intersections and segments of NYS Route 52.

Table J-A-2

Collision Summary for Locations with Ten or More Reportable Collisions Over Five Years

Type	Frequency of Occurrence [4]	
	NYS Route 311 and Terry Hill Road	**NYS Route 311 and Ramps of Interstate 84**
Reported Collisions	14	16
Fixed Object Single Vehicle Accident [1]	0	1
Multi-Vehicle accident [1]	14	15
Pedestrian/bicyclist [1]	0	0
Wet Road [1]	5	1
Dry Road [1]	8	13
Rear end [1]	5	3
Left turn [1]	6	3
Right angle [1]	1	8
Parked [1]	0	0
Sideswipe [1]	0	0
Overtaking [1]	0	0
Other [1]	1	1
Fell asleep/Alcohol [2]	0	1
Driver inattention [2]	0	1
Unsafe speed [2]	1	0
Failure to yield ROW or disregard traffic control [2]	3	10
Slippery pavement [2]	2	0
View obstruction [2]	0	0
Brakes Defective [2]	0	0
Glare [2]	0	0
Improper turn [2]	0	0
Improper lane use [2]	0	0
Following too close [2]	4	0
Backing unsafe [2]	0	0
Unsafe lane change [2]	0	0
Other [2]	3	3

Source: New York State Department of Transportation, August 17, 2004, May 31, 2005, and June 17, 2007.

[1] Reportable Collisions from Table J-A-1.

[2] Reportable Collisions only with one or more apparent factors.

[3] Reportable and Non Reportable. Table Covers Period from June 1, 1999 to May 31, 2002, and January 1, 2004 to December 31, 2005.

[4] Full data from June 1, 1999 to May 31, 2002 plus partial data January 1, 2004 to December 31, 2005.

For all segments and intersections with ten or more reportable collisions, additional background information is provided in Table J-A-4. The frequency of collisions relate to a combination of factors. The most common factors were “Following too Close” with 15

occurrences and “Failure to Yield Right-of-way" or "Disregard Traffic Control” with four occurrences each. The most frequent type of collisions are rear end collisions with 15 occurrences which can be attributed to “Following too Closely”. The “Failure to Yield Right-of-way" or "Disregard to Traffic Controls”, contributes to left turn collisions and right angle collisions. Rear end collisions tend to be common at signalized intersections as is indicated at NYS Route 52/NYS Route 311 in Table J-A-4.

Table J-A-3

NYS Route 52 Collision Frequency and Severity Over Five Years[1]

Location (Mile Marker)**	Number of Collisions in a Three Year Period	Injury	Property Damage Only	Not Reportable
NYS Rt 311/ NYS Rt 52 Intersection (52 8405 1035)	**7/2**	3/1	2/1	2/0
NYS Route 52 (52 8405 1035 to 1038)*	**18/9**	11/6	5/3	2/0
NYS Route 52 (52 8405 1039 to 1041)	**2/4**	2/4	0/0	0/0
NYS Route 52 (52 8405 1042 to 1044)	**11/8**	6/4	3/4	2/0
NYS Route 52 (52 8405 1045 to 1047)	**6/3**	5/3	0/0	1/0
NYS Rt 52/ Towners Road* intersection (52 8405 1045, 58)	**13/1**	9/1	3/0	1/0
NYS Route 52 (52 8405 1048 to 1050)*	**12/3**	7/2	4/1	1/0
NYS Route 52 (52 8405 1051 to 1053)	**5/7**	4/6	0/0	1/1
NYS Route 52/ Horse Pound Rd. intersection (52 8405 1056)****	**0/0**	0/0	0/0	0/0
NYS Route 52 (52 8405 1054 to 1057)***	**8/4**	5/3	1/1	2/0

No fatalities at any of the above intersections.

[1]Full data from June 1, 1999 to May 31, 2002/Partial data January 1, 2004 to December 31, 2005.

* See Table J-A-4 for sections or intersection with ten or more reportable collisions.

** Major intersections shown are not included in sections. Sections are three tenths of a mile except as noted.

*** Four tenths of a mile section.

**** Derived based on traffic control.

Source: New York State Department of Transportation dated June 3, 2004, May 31, 2005, and June 17, 2007.

Table J-A-4

NYS Route 52 Collision Summary for Locations with Ten or More Reportable Collisions Over Five Years

Reportable Collisions	Frequency of Occurrence between NYS Route 52 mile markers/intersections[1]		
	1035 to 1038 0.3 miles	1048 to 1050 0.3 miles	NYS Rt 52 and Towners Intersection
Intersections in segment[3]	NYS Rt 311	Towners Road	
Total Reportable	25	14	15
Fixed Object Single Vehicle Accident	1	1	0
Multi-Vehicle accident	**23**	**13**	**13**
Pedestrian/bicyclist	0	0	0
Wet Road	3	3	0
Dry Road	**17**	**9**	**11**
Rear end	**15**	**5**	**3**
Left turn	**1**	**1**	**5**
Right angle	**1**	**0**	**2**
Parked	**0**	**0**	**0**
Sideswipe	**0**	**0**	**0**
Overtaking	**0**	**2**	**0**
Other	**3**	**2**	**0**
Apparent Factors[2]			
Fell asleep or Alcohol	**0**	**0**	**0**
Driver inattention	**0**	**0**	**0**
Unsafe speed	**2**	**0**	**0**
Failure to yield ROW or disregard traffic control	**3**	**0**	**2**
Slippery pavement	**1**	**0**	**0**
View obstruction	**0**	**0**	**0**
Brakes Defective	**0**	**0**	**0**
Glare	**0**	**0**	**1**
Improper turn	**0**	**0**	**0**
Improper lane use	**0**	**1**	**1**
Following too close	**10**	**5**	**4**
Animal's action	**1**	**0**	**0**
Unsafe lane change	**0**	**1**	**1**
Other	**1**	**2**	**2**

Source: New York State Department of Transportation, June 3, 2004, May 31, 2005, and June 17, 2007. Table covers period from June 1, 1999 to May 31, 2002 and January 1, 2004 to December 31, 2005.

[1] Reportable Collisions.

[2] Reportable Collisions only with one or more apparent factors.

[3] Segment collisions excludes intersections with other roads.

Fair Street (County Road 60)

Collision data was reviewed for Fair Street between NYS Route 311 and the Carmel town line. Table J-A-5 shows the frequency of collisions at key intersections and segments of Fair Street. There are no segments with more than ten reportable collisions.

Table J-A-5
Fair Street Collision Frequency and Severity Over Three Years

Location (Node)	Number of Collisions in a Three Year Period	Injury	Property Damage Only	Not Reportable
Town of Carmel to Bullet Road	**10**	3	2	5
Bullet Road	**4**	1	3	0
Bullet Road to Tower Road	**7**	2	2	3
Tower Road	**1**	1	0	0
Tower Road to Noonan Drive	**4**	1	1	2
Noonan Drive	**3**	2	0	1
Noonan Drive to Terry Hill Road	**2**	2	0	0
Terry Hill Road	**2**	2	0	0
Terry Hill Road to NY Route 311	**5**	0	3	2

No fatalities at any of the above intersections.

Covers period from June 1, 1999 to May 31, 2002. Source: New York State Department of Transportation, May 31, 2005.

Source: New York State Department of Transportation dated May 21, 2004 and May 31, 2005.

Fair Street at the five locations with the most collisions had most frequently right angle collisions (right or left turn) with “Failure to Yield Right-of-way or Disregarding Traffic Control”. Less than a quarter of the collisions were with fixed objects. Slippery pavement was noted in almost all cases of wet road collisions.

Appendix J

TRAFFIC SENSITIVITY ANALYSIS

Attachment B
Gateway Summit Trip Generation

Attachment Table J-B
Gateway Summit and Fairways Modified Road Configuration Alternative Pharmacy Option
Project Site Trip Generation Summary

Land Uses and Size (Potential Uses)	Trips								
	A.M. Peak Hour			P.M. Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)
Gateway Summit									
Hotel 150 rooms, Conference Center, and Banquet Facility *	41	26	67	47	42	89	60	48	108
Quality Restaurant 7,600 square feet **	5	1	6	38	19	57	48	34	82
15,000 square foot Pharmacy with Drive through	23	17	40	63	66	129	59	59	118
Elderly Residences, 150 dwelling units	18	22	40	28	18	46	23	23	46
Corporate/Professional Offices 6,000 square feet	17	2	19	2	7	9	2	2	4
Recreational Community Center 68,000 square feet	67	43	110	32	79	111	43	44	87
The Fairways									
Elderly Residences, 150 dwelling units	18	22	40	28	18	46	23	23	46
Conservation Area (Vacant)	0	0	0	0	0	0	0	0	0
Alternative Plan Total	**189**	**133**	**322**	**238**	**249**	**487**	**258**	**233**	**491**
Total from DEIS	282	164	446	239	275	514	287	259	546
Percent Change	**-33%**	**-19%**	**-28%**	**-4%**	**-9%**	**-5%**	**-10%**	**-10%**	**-10%**

Source: Proposed Gateway Summit and Fairways Projects GFEIS, Tim Miller Associates, Inc., August 9, 2006.

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.

* Hotel plan pending before the Town is 123 rooms.

** Restaurant plan before the Town of Carmel is 7,500 square feet.

Appendix J

TRAFFIC SENSITIVITY ANALYSIS

Attachment C
Level of Service Calculation

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JAG*
Agency/Co.	*TMA*
Date Performed	*5/28/07*
Analysis Time Period	*PM Peak Hour*

Site Information

Intersection	*NYS Route 311 & Fair Street*
Jurisdiction	*Town of Patterson*
Analysis Year	*Build Condition*

Project Description *Patterson Crossing FEIS*

East/West Street: *NYS Route 311* | North/South Street: *Fair Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*565*	*90*	*83*	*374*	
Peak-Hour Factor, PHF	*1.00*	*0.97*	*0.97*	*0.91*	*0.91*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*582*	*92*	*91*	*410*	*0*
Percent Heavy Vehicles	*0*	--	--	*1*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*85*		*199*			
Peak-Hour Factor, PHF	*0.86*	*1.00*	*0.86*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*98*	*0*	*231*	*0*	*0*	*0*
Percent Heavy Vehicles	*3*	*0*	*3*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (veh/h)		*91*		*329*				
C (m) (veh/h)		*922*		*319*				
v/c		*0.10*		*1.03*				
95% queue length		*0.33*		*11.75*				
Control Delay (s/veh)		*9.3*		*96.1*				
LOS		*A*		*F*				
Approach Delay (s/veh)	--	--	*96.1*					
Approach LOS	--	--	*F*					

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JAG
Agency/Co.	TMA
Date Performed	5/28/07
Analysis Time Period	PM Peak Hour

Site Information

Intersection	NYS Route 311 & Fair Street
Jurisdiction	Town of Patterson
Analysis Year	Build with Flare

Project Description: Patterson Crossing FEIS

East/West Street: NYS Route 311 | North/South Street: Fair Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		565	90	83	374	
Peak-Hour Factor, PHF	1.00	0.97	0.97	0.91	0.91	1.00
Hourly Flow Rate, HFR (veh/h)	0	582	92	91	410	0
Percent Heavy Vehicles	0	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	85		199			
Peak-Hour Factor, PHF	0.86	1.00	0.86	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	98	0	231	0	0	0
Percent Heavy Vehicles	3	0	3	0	0	0
Percent Grade (%)		0			0	
Flared Approach		Y			N	
Storage		1			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		91		329				
C (m) (veh/h)		922		458				
v/c		0.10		0.72				
95% queue length		0.33		5.66				
Control Delay (s/veh)		9.3		30.5				
LOS		A		D				
Approach Delay (s/veh)	--	--	30.5					
Approach LOS	--	--	D					

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Rt 311/ Terry Hill Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	8/12/07	Jurisdiction	Town of Kent
Time Period	PM Peak Hour	Analysis Year	Build signal right left
		Project ID	Patterson Crossing Retail Ctr

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	1	1	0	1	1	0	0	1	1	0	1	0
Lane Group	L	TR		L	TR			LT	R		LTR	
Volume, V (vph)	5	491	143	211	641	28	92	37	128	3	1	1
% Heavy Vehicles, %HV	3	3	3	2	2	2	2	2	2	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.98	0.98	0.98	0.86	0.86	0.86	0.90	0.25	0.25
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, l_1	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Arrival Type, AT	3	3		3	3			3	3		3	
Unit Extension, UE	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000			1.000	1.000		1.000	
Initial Unmet Demand, Q_b	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0		12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0		0	0			0	0		0	
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 66.0	G =	G =	G =	G = 24.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	5	668		215	683			150	149		11	
Lane Group Capacity, c	376	1176		390	1222			349	380		412	
v/c Ratio, X	0.01	0.57		0.55	0.56			0.43	0.39		0.03	
Total Green Ratio, g/C	0.66	0.66		0.66	0.66			0.24	0.24		0.24	
Uniform Delay, d_1	5.8	9.2		9.1	9.2			32.2	31.9		29.1	
Progression Factor, PF	1.000	1.000		1.000	1.000			1.000	1.000		1.000	
Delay Calibration, k	0.11	0.16		0.15	0.16			0.11	0.11		0.11	
Incremental Delay, d_2	0.0	0.7		1.7	0.6			0.9	0.7		0.0	
Initial Queue Delay, d_3	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Control Delay	5.8	9.9		10.8	9.7			33.1	32.6		29.1	
Lane Group LOS	A	A		B	A			C	C		C	
Approach Delay	9.9			10.0			32.8			29.1		
Approach LOS	A			A			C			C		
Intersection Delay	13.7			X_C = 0.53			Intersection LOS			B		

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Rt 311/ Terry Hill Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	8/20/07	Jurisdiction	Town of Kent
Time Period	Saturday Holiday Peak Hour	Analysis Year	Build signal right left lanes
		Project ID	Patterson Crossing Retail Center

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N_1	1	1	0	1	1	0	0	1	1	0	1	0
Lane Group	L	TR		L	TR			LT	R		LTR	
Volume, V (vph)	3	571	104	131	509	20	90	31	150	3	3	1
% Heavy Vehicles, %HV	1	1	1	2	2	2	2	2	2	0	0	0
Peak-Hour Factor, PHF	0.89	0.89	0.89	0.87	0.87	0.87	0.72	0.72	0.72	0.90	0.58	0.58
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, l_1	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Arrival Type, AT	3	3		3	3			3	3		3	
Unit Extension, UE	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000			1.000	1.000		1.000	
Initial Unmet Demand, Q_b	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0		12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N_m												
Buses Stopping, N_B	0	0		0	0			0	0		0	
Min. Time for Pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 66.0	G =	G =	G =	G = 24.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	3	759		151	608			168	208		10	
Lane Group Capacity, c	439	1213		325	1222			347	380		419	
v/c Ratio, X	0.01	0.63		0.46	0.50			0.48	0.55		0.02	
Total Green Ratio, g/C	0.66	0.66		0.66	0.66			0.24	0.24		0.24	
Uniform Delay, d_1	5.8	9.8		8.3	8.6			32.7	33.2		29.0	
Progression Factor, PF	1.000	1.000		1.000	1.000			1.000	1.000		1.000	
Delay Calibration, k	0.11	0.21		0.11	0.11			0.11	0.15		0.11	
Incremental Delay, d_2	0.0	1.0		1.1	0.3			1.1	1.7		0.0	
Initial Queue Delay, d_3	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Control Delay	5.8	10.9		9.4	8.9			33.7	34.9		29.1	
Lane Group LOS	A	B		A	A			C	C		C	
Approach Delay	10.9			9.0			34.4			29.1		
Approach LOS	B			A			C			C		
Intersection Delay	14.9			X_C = 0.60			Intersection LOS			B		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JAG
Agency/Co.	TMA
Date Performed	5/29/07
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Route 311/Route 164 west
Jurisdiction	Town of Patterson
Analysis Year	Build Condition

Project Description: Patterson Crossing Retail Ctr

East/West Street: Route 311/ Route 164 | North/South Street: Route 164

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		605	161		330	
Peak-Hour Factor, PHF	1.00	0.94	0.94	1.00	0.82	1.00
Hourly Flow Rate, HFR (veh/h)	0	643	171	0	402	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR		T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	127		0			
Peak-Hour Factor, PHF	0.96	1.00	0.96	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	132	0	0	0	0	0
Percent Heavy Vehicles	1	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration				LR				
v (veh/h)				132				
C (m) (veh/h)				226				
v/c				0.58				
95% queue length				3.29				
Control Delay (s/veh)				41.1				
LOS				E				
Approach Delay (s/veh)	--	--	41.1					
Approach LOS	--	--	E					



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W E
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File 04031/FEIS/FEIS Appendix/08/29/07

Figure J-C-1: Saturday Holiday Build Peak Hour Traffic with Mitigation
Patterson Crossing Retail Center FEIS
Town of Patterson, Putnam County, NY
Source: Synchro 7, NYS GIS Clearinghouse

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418