TOWN OF NEW WINDSOR

555 Union Avenue
New Windsor, New York 12553
Telephone/Fax: (845) 563-4611

OFFICE OF THE TOWN CLERK
DEBORAH GREEN

1763

I, **DEBORAH GREEN,** Town Clerk of the Town of New Windsor in the County of Orange, State of New York, **HEREBY CERTIFY** that the attached extract of the Minutes has been compared by me with the Minutes of the Special Town Board Meeting of the Town of New Windsor in the County of Orange, State of New York, held on the 29th day of May 2014, and the same is a true and correct transcript therefrom and of the whole thereof so far as the same relates to the subject matter referred to.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of said Town this 30th day of May 2014.

Town Seal

Deborah Green, Town Clerk
Town of New Windsor

MOTION - ADOPT SEQRA NEGATIVE DECLARATION - GREENETRACK GAMING FACILITY.

MOTION BY COUNCILMAN LUNDSTROM

SECONDED BY COUNCILMAN REGENBAUM

That the Town Board of the Town of New Windsor hereby adopt a Negative Declaration under the State Environmental Quality Review Act for the Greenetrack, Inc., gaming/casino facility to be located upon 140+/- acres of Town-owned land at Stewart International Airport in accordance with Resolution annexed hereto.

ROLL CALL: ALL AYES **MOTION CARRIED: 5-0**

SPECIAL TOWN BOARD RESOLUTION: MAY 29, 2014

MOTION - RESOLUTION - ADOPT SEQRA NEGATIVE DECLARATION - GREENETRACK GAMING FACILITY.

MOTION BY COUNCILMAN LUNDSTROM

SECONDED BY COUNCILMAN REGENBAUM

WHEREAS, Greenetrack Inc. ("Greenetrack") is proposing to lease lands from the Town of New Windsor located at the former Stewart Army base for development as a Gaming/Entertainment Facility (the "Project") pursuant to the Upstate New York Gaming Economic Development Act of 2013 (the "Act"); and

WHEREAS, the Project requires certain actions to be taken by the Town Board, including but not limited to approval of a ground lease, a Host Municipality Agreement, and zoning amendments to accommodate the Project; and

WHEREAS, a thorough review under SEQR was completed for a project know as 'New York International Plaza' on the subject project site in 2002 and 2003 which resulted in SEQR Findings being adopted on August 27, 2003 concluding that all impacts related to that project were mitigated to the greatest extent practical; and

WHEREAS, the portion that project that was approved on the area proposed to be leased by Greenetrack, consisting of just over 1,300,000 square feet of development was never constructed but several recommended traffic improvements as recommended during that SEQR review were implemented; and

WHEREAS, Greenetrack and its consultants submitted to the Town Board a completed Part I of a Full Environmental Assessment Form ("EAF") pursuant to the New York State Environmental Quality Review Act ("SEQRA",) in order to commence the environmental review of the Project; and

WHEREAS, the Town of New Windsor retained special legal counsel, a planning consultant and a traffic engineer to review all submitted documents and plans for the project and all of their comments and recommendations have been incorporated into the Environmental Assessment Form; and

WHEREAS, on April 14, 2014 the Town Board declared their intent to serve as SEQRA Lead Agency for the environmental review of the Project, and a notice to other involved and interested agencies was distributed on that day, together with a copy of the Part I EAF; and

WHEREAS, after the Town Board circulated the lead agency notice and Part I EAF, the New York Gaming Facility Location Board (the "Location Board") issued an official response to questions which clarified that the Act's zoning supersession applies only to gaming facilities and not related uses, thereby requiring conformity with local zoning of all uses other than a gaming facility; and

WHEREAS, as a result of the Location Board's statements regarding local zoning, the Town Board concluded that certain local land use approvals would be needed to construct the Project, including site plan approval from the Town of New Windsor Planning Board ("Planning Board"), thereby causing the Planning Board to be an involved agency for the Project; and

WHEREAS, on May 8, 2014, the Town Board, through the Town Planning Consultant, prepared a letter and a revised EAF which was sent to the Planning Board and other interested agencies, requesting that those agencies review the lead agency circulation notice and respond to the Town Board by May 15, 2014; and

WHEREAS, on May 14, 2014 the Planning Board held its regular meeting, at which time the Planning Board and its consultants discussed the Town Board's lead agency circulation notice, and the Planning Board resolved to consent to the Town Board's intent to serve as lead agency, and a letter was sent to the Town Board confirming that consent; and

WHEREAS, the Town Board has received and considered correspondence from other involved and interested agencies, none of which has objected to the Town Board serving as SEQRA Lead Agency; and

WHEREAS, on May 6, 2014, the Town of New Windsor held its first of two public informational meetings where the applicant presented its plans and responded to public questions and comments with the main concerns relating to traffic, water supply and sewer treatment; and

WHEREAS, on May 21, 2014, having received no objections, the Town Board confirmed its status as SEQRA Lead Agency for the Project; and

WHEREAS, Greenetrack and its consultants completed an expanded Part III of the EAF, which Part III evaluated in detail the potential for significant adverse environmental impacts that could result from the Project which is proposed to be 900,000 square feet less total development and will contain 178 fewer hotel rooms than was previously approved for the area proposed to be leased by Greenetrack. This document updated analysis where regulations or conditions have been updated or changed since the previous Environmental Impact Statement. After the initial

submittal, the document went through several rounds of revisions by the Town's consultants to ensure all potential impacts were adequately and thoroughly analyzed to ensure they avoid or minimize all potential adverse impacts to the maximum extent practical by incorporating those mitigative measures that are appropriate including additional mitigations to community services, noise, asbestos abatement and traffic improvements as delineated in that document. The traffic study was revised to take a more conservative approach by assuming the development's peak traffic times would be the same as existing peaks on local roadways to ascertain a worst possible scenario. A follow up traffic monitoring program at one and three years after the completion of the project will also be required to review unforeseen impacts which may occur in the future; and

WHEREAS, the EAF, including the Part III, were made available to the public at Town Hall and posted online on the Town's website for public review; and

WHEREAS, the Town Board held its second special public meeting on May 27, 2014 during which a presentation was made by Greenetrack's consultants regarding its evaluation of the potential for significant adverse environmental impacts that could result from the Project as discussed in the EAF. Comments were again accepted from the public at this meeting; and

WHEREAS, at the May 27, 2014 special meeting, questions and comments were tendered by the public, which were responded to by Greenetrack, the Town consultants, and the Town Board; and

WHEREAS, the Orange County Planning Department ("OCPD") responded to the Town Board's SEQRA Lead Agency circulation notice with a letter dated May 19, 2014 which was received by the Town Board on May 28, 2014, and in which the OCPD consented to the Town Board serving as SEQRA Lead Agency and further recommended that specific areas of potential environmental impact be evaluated which included community services, air quality and noise, aesthetics, cultural resources, traffic and transportation, water and sewer, vegetation and wildlife, secondary and cumulative impacts, and additional mitigation measures. All of these areas have been addressed in the EAF. The OCPD offered several other points such as the updating of mapping, SEQR documentation, stormwater regulations and the presence of the Silver Stream. The project will be required to be consistent with all updated regulations including the use of the current SEQR forms and consistency with the most up to date NYS DEC stormwater management regulations and best practices. Floodplains and the Silver stream will not be disturbed or otherwise impacted by this project; and

WHEREAS, the Town Board has considered all of the materials presented to it by Greenetrack and its consultants, by members of the public, by the Town consultants, and by other involved and interested agencies, including the May 19, 2014 letter from OCPD; and

WHEREAS, the Town Board concludes that the Project, with its various road and intersection improvements, traffic monitoring, commitment to additional future road and intersection improvements if needed, sewage treatment plan improvements, and other elements, does not have the potential to generate any new significant adverse environmental impacts not identified in the prior environmental impact statement prepared for the Project site; and

WHEREAS, the Town's consultants have prepared a SEQRA Negative Declaration, which has been reviewed by the Town Board;

NOW, THEREFORE IT IS HEREBY RESOLVED that the Town Board hereby adopts the SEQRA Negative Declaration annexed hereto for the Greenetrack Project.

ROLL CALL: ALL AYES **MOTION CARRIED: 5-0**

SPECIAL TOWN BOARD AGENDA: May 29, 2014

State Environmental Quality Review

NEGATIVE DECLARATION

Notice of Determination of Non-Significance

Town of New Windsor, Orange County, New York

Name of Action: Greenetrack, Inc. Casino Resort (the "Applicant")

Date: May 29, 2014

This notice is issued pursuant to Part 617 of the implementing regulations pertaining to Article 8 (State Environmental Quality Review Act) of the Environmental Conservation Law.

Commencing in 2002 and ending in 2003, an environmental impact statement ("EIS") was prepared for a large scale development proposed at the project site, known as New York International Plaza (NYIP). Following completion of the EIS, SEQRA Findings were issued. Planning Board approval was granted for NYIP on August 27, 2003. The NYIP project approval authorized construction of more than 2 million total square feet of mixed development on 263 acres, including high tech offices, a convention center, a hotel, retail, residential and light manufacturing. While approximately 951,000 square feet of the development was constructed along Route 207, no development occurred within the 140 acre area to be leased as part of this Action. The Greenetrack proposal (the "Project") consists of approximately 900,000 less square feet of development space and 178 less hotel rooms than what was originally approved as part of the NYIP development on the 140 acre Greenetrack project area.

The Town of New Windsor Town Board, as Lead Agency, has determined that the Project and the proposed Action described below would not have the potential to generate any new significant adverse environmental impacts not identified and analyzed in the NYIP FEIS. In addition, the Project would generate less intensive development than would be generated if the remainder of the NYIP project is constructed. The Town Board has concluded, for the reasons stated below, that the Project and proposed action would not have the potential to generate any significant adverse impacts on the environment and, accordingly, no Environmental Impact Statement will be prepared.

An expanded Part III of the Environmental Assessment Form ("EAF") was prepared by the Applicant which was reviewed and revised by the Town's planning and engineering consultants to ensure the project is consistent with all updated regulations and all relevant areas of environmental concern were identified and properly analyzed.

A copy of all SEQR documentation can be reviewed at Town Hall, 555 Union Avenue, during normal business hours or can be viewed online at http://town.new-windsor.ny.us/

SEQR Status: Type 1

Conditioned Negative Declaration: No

Description of Action: Greenetrack Inc. is proposing the following: The Project entails the construction of a full-service Gaming Facility pursuant to the Upstate New York Gaming Economic Development Act of 2013, along with associated amenities and facilities described more fully below. The Applicant proposes to enter into a Ground Lease for approximately 140 acres of land currently owned by the Town of New Windsor. Because the Project would not be fully allowed under the extant zoning, the Proposed Action includes potential amendments to the Town's zoning code to create a Special Zoning District for the Project site. The Project site is located adjacent to Stewart International Airport in the Town of New Windsor, Orange County, New York. The term of the lease is proposed to be 99 years. Mapping attached to the EAF depicts the Project general location, the lands to be leased, environmental features in the vicinity, a conceptual layout of the proposed project and architectural renderings.

The Gaming Facility will be located on approximately 60 acres of the leased land. The facility will include the following elements:

- Casino with 3,000 slot machines and 75 gaming tables, including high limit gaming. The gaming floor will be approximately 100,000 square feet in size.
- A 14-story tower hotel with 350 guestrooms and associated amenities (e.g. business center, lobby, banquet facility, etc.)
- Spa and fitness amenities, including an indoor/outdoor (swim-out) swimming pool
- Restaurants and eating facilities in a range of cuisines and price levels
- Entertainment venues, including a center bar, a jazz lounge, a dance club, a movie theater, a wine cellar and cigar bar
- Conference center facilities, including a main ballroom
- Event center/theater for live performances (2,200 seat capacity)
- Parking facilities, including a multi-story parking garage, covered valet parking and surface parking lots
- Potential future development of 140,000 square feet of retail space (To be built in a subsequent phase of development. However, for analysis purposes this development was assumed to be constructed now.)
- Related facilities in support of the overall site development (access roadways, landscaping, etc.)

The main facility will be built south of International Boulevard; west of Breunig Road, and east of Airport Center Drive. Potential future retail development would be north of International Boulevard. The property is mostly vacant land, although there are currently some buildings on the site that would be demolished. The Orange County Police Chiefs' Association Police Academy is located at 520 Sue Kelly Avenue at the southern end of the property and is proposed to be demolished and new facilities renovated at the developer's expense. Additional buildings on the site

that would be demolished are largely vacant, and consist mainly of former barracks and other former Air National Guard facilities.

Location: The project site is immediately west of Stewart International Airport. The main facility will be built south of International Boulevard; west of Breunig Road, and east of Airport Center Drive. Potential future retail development would be north of International Boulevard.

Reasons Supporting This Determination:

The proposed action is not anticipated to result in any adverse environmental impacts based on the following:

Project Benefits

1. The project is anticipated to result in significant economic benefits, including up to 1,800 temporary construction jobs and approximately 1,800 to 2,500 permanent jobs in the casino, hotel, restaurants and related facilities. The project will also generate significant local revenues from property, hotel and sale taxes, as well as State revenue.

Land Disturbance

2. The proposed action consists of less total land disturbance than the unbuilt portion of the approved NYIP development and much of land has been previously disturbed. Approximately 60 acres of the total 140 acres of leased land will be development with the rest to remain as manicured lawn or open space. No development is proposed in areas of very steeply sloped land.

Geology

3. There are no unusual landforms, such as cliffs, caves or other unique geological features located on the project site. Based on preliminary geotechnical investigation no blasting will be required during construction.

Drainage

4. During the site plan process, the Applicant will prepare a Stormwater Pollution Prevention Plan consistent with the most up to date NYS DEC regulations for redevelopment sites. The stormwater design for the project will include proper on-site detention for water quantity controls and will employ standard practices and green infrastructure practices for water quality treatment. There would be no increase in runoff to any Town or NYSDOT storm sewer facility. The building will employ the use of a green roof on the event center which will significantly reduce the overall impervious "footprint" of the site and help as both a stormwater quantity and quality control feature.

Surface Water

5. There are no DEC wetlands on the Project Site. There are small federal wetlands on the Project site. The Project will not result in any disturbance to the identified on site wetlands or the nearby stream (DEC stream H-P225-1-3-3). During demolition and subsequent construction, Greenetrack, Inc. will implement erosion and sediment control measures to ensure that there are no discharges of sediment into any wetland or watercourse.

6. There are no floodplains or floodways within the project area and no development will occur on lands subject to flooding.

7. The Silver stream is located southwest of the project site and will not be disturbed or otherwise impacted by the proposed action.

Utilities

8. The proposed project is proposed to generate 180,000 gallons per day of sewage effluent to be treated at the Town Wastewater Treatment Plant ("WWTP"). New 8-inch PVC sanitary sewer, manholes, and appurtenances will be constructed and connect directly to the Town's 30-inch diversion sewer along Breunig Road. Although the Town's WWTP has sufficient available capacity, the Applicant has confirmed that the sewage generated by the Project would be more concentrated than typical sewage. To preclude any adverse impact on the Town's WWTP, the developer has proposed and will pay for improvements to the Town's WWTP to provide increased pre-treatment capability and other improvements as more specifically described in the Host Agreement entered into between the Town and the Applicant. The proposed improvements to the Town WWTP will preclude any potential significant adverse impact from the more highly concentrated sewage associated with the Project. The Town engineer will review and approve details of these improvements during the site plan review process.

9. The Project will use an estimated 180,000 gallons per day of potable water, which will be supplied by the Town of New Windsor Water District #9. Based on conversations with the Town Engineer and review of current information, there is sufficient water capacity to service the proposed development with certain system improvements. New water lines will be constructed on site that will connect to existing Town water lines. A looped 12-inch water main is proposed to run through the proposed development for water service and fire protection. The Applicant will relocate an 8-inch waterline and a portion of the 20-inch waterline along Airport Center Drive. New or relocated lines will be designed consistent with Town specifications and will maintain capacity for any upstream water users serviced by the affected water lines. The Town engineer will review and approve details of these improvements during the site plan review process. Additional improvements will be made as specified in the Host Agreement. Based on the foregoing, the Project would not have the potential to generate any significant adverse impacts on water supply.

Ground Water

10. The EAF Mapper identifies a Principal Aquifer adjacent to the project site to the west. No work is proposed within the aquifer area. Onsite ground water will not be utilized as a potable water source.

Air Quality

11. Given the proposed range of uses are lower in intensity and traffic volumes are projected to be lower than that which was projected to be generated from the approved NYIP project, the proposed development would generate air quality impacts similar or less than those anticipated under the NYIP development. No significant impacts are anticipated.

Endangered Species

12. During the summer months, Indiana bats are known to roost in large trees in the region encompassing Orange County, preferring large shagbark hickory (Carya ovate) and black locust trees (Robinia pseudoacacia), or trees with large cracks and/or flaky bark. Given that the project site has been previously disturbed, it has very few mature trees, except for street trees planted along the roadways. In order to act with an abundance of caution and consistent with recommendations from the NYS DEC (correspondence provided in Appendix J of the EAF), the applicant will not remove mature trees on the project site between October 1st and March 31st to ensure no potential habitat is disturbed. No other suitable habitat for other threatened or endangered species or species of concern exists onsite. No impacts to any of these species are anticipated.

Agriculture

14. The proposed action will have no negative impacts on agricultural resources. No agriculture occurs on the Project site.

Visual Impacts

15. A visual impact analysis was prepared by the Applicant which concludes that based upon changes in topography, existing dense vegetation and the use the shielded and night-sky friendly lighting, the Project will not have a negative impact on viewsheds associated with Stewart State Forest. Vegetation and topography will also partially screen the project site from surrounding residences. Given the total amount of development will be 900,000 square feet less than the previously approved development on the project site, the overall visual impacts are anticipated to be less than previously anticipated.

Historic and Archeological Resources

16. The Sayre-McGregor House, a locally historic site, and two subsurface artifact concentrations exist in the vicinity, but outside of the 140-acre project site. This area was previously proposed to be disturbed for construction of the NYIP development. The current proposal will not disturb any historic, cultural or archeological resources.

Traffic

17. Since the SEQR review for the NYIP development the following mandatory traffic and roadway improvements have been completed in the project vicinity and provide improved roadway capacity over that which was previously available.

18. The Town retained a traffic engineer to review the applicant's traffic studies and to provide additional recommendations where appropriate.

19. The applicant's traffic engineers have verified that the 2015 No-Build background traffic volumes from the NYIP study are still representative of expected traffic volumes in 2015 by

reviewing traffic generated by the portion of the NYIP development that has been constructed to date and comparing the 2015 Build Volumes from the NYIP study to the expected 2015 Build Traffic Volumes for the casino development and other more recent traffic studies associated with recently completed and proposed development projects within the study area. Four key roadway segments that were studied included Route 300, Route 207, Route 747 and Route 17K. Existing traffic volumes from NYSDOT continuous count stations were compared to those forecast as the 2015 background no-build volumes presented in the 2002 study. As shown in Chart 1 below, the current traffic volumes are significantly less than the 2015 projected background volumes that were depicted in the 2002 NYIP Traffic Study. Since the more conservative numbers were used for the Traffic Assessment, this will more than account for any anticipated growth due to other developments in the near term along Route 207. Therefore the 2015 background no-build volumes that were projected in the NYIP Traffic Impact Study represent a conservative baseline and are suitable for use in the Greenetrack traffic assessment for the build condition analysis. To ascertain a worst case scenario for traffic impacts, the study assumed that the peak traffic from the development would occur at the same time as existing peaks on local roadways. Additional off-site improvements are being proposed as part of the project in order to improve both internal and external traffic circulation as follows:

- At the International Boulevard and new Main Site Entrance removal of the existing raised median and construction of dedicated turn lanes. All work shall conform to NYSDOT Standards.
- Accessible routes shall be designed to maintain longitudinal and cross slopes that comply with A.D.A. requirements. Sidewalk width shall be a minimum of 5 ft. ADA compliant ramps and detectible warning strips shall be placed at all curb cuts. Structures shall be in accordance with MAG Standard Details and Specifications. All ADA sidewalks shall conform to NYSDOT Standards.
- Pavement Resurfacing consisting of production profiling cold place milling on Sue Kelly Avenue and Aviation Avenue to accommodate service vehicles and motor coaches. Improvements will include milling to a depth of 2 inches and placement of surface course asphalt to a depth of 2 inches. All work shall conform to NYSDOT Standard Specifications for Materials and Construction.
- Modifications to existing pavement striping to create a left turn lane at the secondary site entrance on Breunig Road. Pavement Markings shall conform to MUTCD standards as revised by NYSDOT.

- <u>NY Route 207 at NY Route 300</u>- Extend the existing dedicated right turn lane on the westbound NY Route 300 approach to meet the requirements of the Town and the NYS DOT.

- <u>NY Route 207 at NY Route 300</u>- The Town of New Windsor is presently developing a project to extend the existing dedicated left turn lane on the eastbound NY Route 207 approach. The turn lane would be extended to the west

past the intersection of Moores Hill Road. Greenetrack will contribute a portion of the cost of the construction of this improvement.

- NY Route 207 at Square Hill Road and Weather Oak Hull Road- Greenetrack will evaluate and construct intersection improvements at these intersections. Improvements would include re-alignment of these offset intersections with a traffic signal.

- NY Route 207 at Breunig Road- Extend the existing dedicated right turn lane on the westbound NY Route 207 approach to the retail strip mall. Widen northbound Breunig Road to provide a second lane to meet the existing four lane section to meet the requirements of the Town and the NYS DOT.

The scope and location of these improvements would be refined with the Town and NYS DOT during site plan review.

As a result of future traffic monitoring as described in the EAF, several intersections may require traffic signal timing adjustments and traffic signal studies due to the anticipated change in traffic patterns. The locations for potential future traffic signals are as follows:

- Route 747 at International Boulevard
- International Boulevard at proposed site access driveways of casino and shopping center
- Breunig Road at proposed site access driveway

20. To further ensure that the Project does not generate any new significant adverse traffic impacts, a post construction traffic monitoring program will be undertaken and paid for by Greenetrack to confirm that traffic generation is no greater than the projections set forth in the Traffic Study update. Monitoring will take place six (6) months and one (1) year after the issuance of the Gaming Facility is operational and then annual monitoring will take place until the entire project is completed. Monitoring will then take place within one (1) year of the final certificate of occupancy is issued for the project and again after four (4) years. Results will be submitted to the Town for their review. If any significant adverse traffic impact from the Project is identified, then Greenetrack shall pay for such additional improvements as are necessary to preclude such significant adverse traffic impacts from the Project.

Energy

21. Energy will be obtained from the local utility company, Central Hudson Gas and Electric. There is sufficient power in the area and infrastructure is available at the Project site. The building and its systems will incorporate a range of sustainable strategies to reduce environmental impacts, and it will be designed to meet LEED requirements (see EAF for Sustainable Design project components).

Noise

22. Long term noise generated from the project is anticipated to be those noises generally associated with commercial uses including HVAC equipment, emergency generators and traffic. The building's HVAC equipment will meet all required noise standards and include noise attenuation equipment. All equipment will be sized/ selected to minimize noise generation. The locations of the equipment will be strategically located to "shield" and "reflect" noise as much as practical. Noise levels will not exceed all applicable Town Zoning Code regulations.

Temporary construction noise will also be generated on a short term basis. All construction activity will adhere to Best Management Practices and will occur on weekdays between the hours of 7:00 AM to 5:00 PM and 7:00 AM to 7:00 PM during the longer daylight hours of the summer months and on Saturdays from 8:00 AM to 5:00 PM. No construction activities will occur on the project site on Sundays or State and Federal holidays. Construction noise will be temporary and construction is anticipated to be completed within the two year time frame required by the state. Construction at the site will be monitored by the Town building Inspector to ensure consistency with both NYS and town code requirements.

Given that sound levels in this area are typically high from commercial and airport activities and that the closest residences are approximately 1000 feet from the proposed casino buildings no significant negative noise impacts are anticipated.

Lighting

23. The proposed project lighting will be fully compliant with the Town Zoning Code. There will be no light spillage onto adjacent properties. To help meet the standards of the code, the project will include dark sky compliant lighting in the parking lots. The FAA may require lighting on the building to meet Federal Aviation guidelines with which the applicant will be required to comply.

Environmental Health

24. A review of the State database indicates that two remediation sites (C336067 and C336022) are nearby, but neither site is within the Project site. (See Appendix O of the applicant's EAF) Site C336067 was a Brownfield Cleanup Program (BCP) application. The site, which is approximately 4.358 acres in size, is owned by the NYS Department of Transportation and is located on the Stewart International Airport property. Site C336022 is also owned by NYS DOT. It is a very small (less than one acre) site that was used in the past for pesticide burial. An investigation led to materials being removed from the site, and a Record of Decision was signed in 2000. Neither area will be disturbed or impacted as a result of the subject development proposal. No environmental impacts are anticipated.

There are existing former barracks buildings located on the property that will be demolished. Based on the age of the buildings, there is the potential of asbestos in construction materials, which could present possible impacts to public health. Greenetrack will comply with all applicable laws and will implement proper protocols during the demolition period to minimize potential impacts from demolition activities, including impacts to public health. If asbestos abatement is required, it will be performed in accordance with US EPA, NYSDEC, NYS Department of Labor and other applicable requirements.

Consistency with Local and Regional Planning

25. The Town of New Windsor Comprehensive Plan. The Town of New Windsor 2009 Comprehensive Plan identifies the lands around Stewart International Airport as a location for more intensive development in order to support economic development and job creation. It specifically recommends that the Town "should encourage airport related development such as hotels, conference centers" and other uses. The project also supports the goals of the Orange County Comprehensive Plan (2010) and the Mid Hudson Regional Economic Development Plan.

Consistency with Zoning

26. The Town will propose a new special Zoning district for the Project site that would specifically permit gaming and entertainment uses and retail, as is proposed. This district would be called the "Planned Casino District (PCD)". The Town Board has determined that this site of approximately 140 acres adjacent to Stewart International Airport is suitable for development as a full service casino with associated uses pursuant to the Upstate New York Gaming Economic Development Act of 2013 and consistent with the economic development goals of the Town and County. Other uses being permitted in this district are currently permitted in the underlying AP zoning district including hotels, conference centers as well as several less intense uses which are currently not permitted under existing zoning but which were analyzed under the NYIP development such as retail, restaurants and personal service uses.

Community Services

27. Orange County, in anticipation of large casinos being developed within the county, conducted a preliminary study to assess possible impacts on state, county and local emergency services providers. (*See Appendix T of the applicant's EAF*) As part of this study, communities where casinos are located were contacted and questioned about the impacts they experienced. Based on this research, the communities that were contacted stated that they have seen minimal impacts in terms of crime rates, medical calls, fire related incidents and emergency management activities.

As a result of the development The Orange County Police Chiefs' Association Police Academy, located at 520 Sue Kelly Avenue at the southern end of the property, will need to be redeveloped. A new Police Headquarters will be reconstructed, at the expense of the applicant at the location of the existing Army Reserve Building at Stewart Airport. Given that the increase in call volume has been determined to be minimal and the applicant will employ private security onsite, there is not likely to be any adverse impacts to Police Services.

There could be slight increased demand on the Vails Gate Volunteer Fire Department. The facility will be designed to minimize the likelihood of fire. Fire flow volumes will be provided to meet insurance underwriter and fire marshal requirements. The spaces will be fully sprinklered in accordance with New York State Building Codes and the Uniform Fire Codes. However, the main hotel building will be 12 to 14 stories tall, which would be the tallest structure within the Fire Department's service area and may require special training and equipment. The Applicant has offered and agreed in the Host Agreement to fund training and equipment purchases to enable the Town meet any new fire safety demand.

It is likely the development would result in approximately three to four additional calls per week, on average, to the New Windsor Volunteer Ambulance Corporation. The ambulance district has stated this increase can be accommodated with existing equipment. Nevertheless, as detailed in the Host Agreement, the Applicant will provide sums for the purpose of expanding, maintaining, training, equipment or other ancillary costs the Town may identify.

Secondary and Cumulative Impacts

28. As a result of the project, visitors of the proposed project are likely to utilize other local businesses having a positive on the Town's overall economic vitality. Employees may chose to move to the town resulting in the construction of additional housing or the reduction of vacant existing housing stock. No negative impacts are anticipated from secondary or cumulative impacts.

For Further Information, Contact:

Hon. George Green, Town Supervisor
555 Union Avenue
New Windsor, NY 12553
(845) 563-4610

THIS NOTICE HAS BEEN SENT TO THE FOLLOWING AGENCIES

INVOLVED AGENCIES:

NYS DEC
Environmental Notice Bulletin – via email
enb@gw.dec.state.ny.us

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-0001

New York State Department of Environmental Conservation
Region 3
21 South Putt Corners Road
New Paltz, New York 12561-1696

Orange County Health Department, Division of Environmental Permits
Attn: Edwin Sims, PE, Acting Director
1887 County Building
124 Main Street
Goshen, New York 10924

New York State Department of Transportation
Region 8
Eleanor Roosevelt State Office Building
4 Burnett Boulevard
Poughkeepsie, New York 12603

New York State Gaming Commission
P.O. Box 7500
Schenectady, New York 12301-7500

Town of New Windsor Planning Board
Attn: Genero Argenio, Chairman
555 Union Avenue
New Windsor, New York 12553

INTERESTED AGENCIES:

Orange County of New York
Attn: Steven M. Neuhaus, County Executive
40 Matthews Street, Suite 104
Goshen, New York 10924

Orange County Planning Department
Attn: David Church, Commissioner
1887 County Building
124 Main Street
Goshen, New York 10924

Town of Newburgh
Attn: Gil Piaquadio
Deputy Supervisor Acting as Supervisor
1496 Route 300
Newburgh, NY 12550

City of Newburgh
Attn: Judy Kennedy, Mayor
83 Broadway
Newburgh, New York 12550

Town of Montgomery
Attn: Michael Hayes, Town Supervisor
110 Bracken Road
Montgomery, New York 12549

Town of New Windsor Police Department
Attn: Michael C. Biasotti, Chief of Police
555 Union Avenue
New Windsor, New York 12553

Vails Gate Fire Department
Attn: Salvatore Gigante, Chairman of the Board of Fire Commissioners
P.O. Box 101
Vails Gate, New York 12584

Washingtonville Central School District
Annt: Roberta Greene, Superintendent
52 West Main Street
Washingtonville, New York 10992

MTA - Metro North
Joseph Giulietti
President
347 Madison Avenue
New York, New York 10017-3739

New York City Department of Environmental Protection
Attn: Emily Lloyd, Commissioner
59-17 Junction Boulevard, 13th Floor
Flushing, NY 11373

NEW YORK STATE ENVIRONMENTAL QUALITY REVIEW DOCUMENTATION

THE GRAND HUDSON HOTEL & CASINO (Greenetrack)

NEW WINDSOR, NY

EXPANDED PART 3 APPENDICES

APPENDIX A	SEQR Correspondence
APPENDIX B	Existing Conditions Mapping
	Site Location USGS Map Property Survey Aerial Photo Architectural Renderings Existing Soils/Borings Environmental Mapping for Mapper
APPENDIX C	Findings from Previous EIS
APPENDIX D	Host Agreement
APPENDIX E	Wetlands Update
APPENDIX F	Preliminary Stormwater/Erosion Plan
	NYIP Stormwater Management Plan, 2002
APPENDIX G	Wastewater Treatment Plant Information
	Water Quality Report, 2013 NYIP Sanitary Sewer Report, 2002 NYIP Water Supply Report, 2002
APPENDIX H	Aquifer and Aqueduct Information
APPENDIX I	Floodplain Map
APPENDIX J	Plants and Animals Section from Previous EIS
	DEC letter Re: Indiana Bat NYIP Upland Sandplover Habitat Assessment Report
APPENDIX K	NYIP Breakdowns vs. Greenetrack
APPENDIX L	Archaeological/Historical Section from EIS
APPENDIX M	TIS from Previous EIS
APPENDIX N	Traffic Update
APPENDIX O	Documentation of Brownfields, etc.
APPENDIX P	Comprehensive Plan - New Windsor
APPENDIX Q	Town Zoning and Regulations
APPENDIX R	Geotechnical Evaluation
APPENDIX S	Parks – State Forest Unit Management Plan and Map
APPENDIX T	Dept. of Emergency Services Report – Impact of Casinos on the Emergency Services of Orange County, NY
APPENDIX U	NYIP Final Environmental Impact Statement, 2003
APPENDIX V	Site Plan Schematic, May 2014

SEQR LEAD AGENCY
COORDINATED REVIEW MAILING

PROJECT:
GREENETRACK INC. AT NEW WINDSOR

REQUESTED LEAD AGENCY:
Town Board, Town of New Windsor
555 Union Avenue
New Windsor, New York 12553

APPLICANT:
Greenetrack, Inc.
C/O 677 Broadway
Suite 301
Albany, New York 12207

APPLICANT'S REPRESENTATIVES:
Hodgson Russ LLP
677 Broadway
Suite 301
Albany, New York 12207
ATTN: Robert McLaughlin, Esq.

Wendel WD Architecture, Engineering, Surveying & Landscape Architecture, P.C.
140 John James Audubon Parkway
Suite 201
Amherst, New York 14228
ATTN: Andrew C. Reilly, PE, AICP

WATG/Designing Destinations
8001 Irvine Center Drive
Suite 500
Irvine, CA 92618

Part F: EAF Additional Information

1. New York International Plaza EIS

   The project site was the subject of a prior proposed development project, known as New York International Plaza. A complete EIS was prepared assessing potential impacts associated with that project, with the DEIS accepted in April 2003 and the FEIS in July of that year. The EIS process resulted in a Positive Findings (see attached Findings Statement). The Town has been using the EIS and the Findings Statement to evaluate projects proposed on this site. This project has utilized information from the NY International Plaza EIS, supplemented with more current information.

2. Involved and Interested Agencies

   The following agencies have been preliminarily identified as Involved Agencies for this project:

   a. New Windsor Town Board: Lead Agency for the lease of the property to Greenetrack, Inc. The Town Board will also coordinate internally with the Town Sewer District, Water Districts and Highway Department.

   b. New York State Department of Environmental Conservation: SPDES permit and potentially other permits or approvals.

   c. Orange County Health Department: potential relocation of water lines and sewer lines; and connections into existing and relocated systems.

   d. New York State Department of Transportation: connection and potential improvements to the State Highway system.

   e. New York State Gaming Commission: approval of application for gaming license.

   The following agencies are Interested Agencies, who will be included in the Coordinated Review mailing.

   a. Orange County
   b. Town of Newburgh
   c. City of Newburgh
   d. Town of Montgomery
   e. Emergency Service Providers (Town of New Windsor Police Department; Vails Gate Fire Department)
   f. Newburgh Enlarged School District
   g. MTA - Metro North
   h. New York City Department of Environmental Protection

3. Conformance with zoning and the Town of New Windsor Comprehensive Plan

The site is currently zoned Airport (AP), which allows indoor and outdoor recreational facilities and structures, hotels, convention and conference centers, and offices, as well as more intensive uses such as manufacturing.

The project is also covered under the Upstate New York Gaming Economic Development Act of 2013, passed by the New York State Legislature, which provides that if the site is approved as a location for gaming, the proposed uses are deemed to be allowable uses.

The Comprehensive Plan for the Town of New Windsor has identified the lands around Stewart International Airport as a location for economic development and job creation. It specifically recommends that the Town "should encourage airport related development such as hotels, conference centers" and other uses. It continues that new development "should reflect a combination of destination uses that would benefit from the Airport and surrounding regional highway system, and uses that will serve and support the immediate region." The proposed use is consistent with these goals and recommendations.

4. Community Services

The applicant and Town have begun communicating with police, fire and other emergency service providers to see if services are adequate for the proposed facility. Initial responses suggest that community services would be sufficient with some mitigation.

5. Stormwater

The proposed project will meet all State and local requirements for stormwater management. It is the applicant's opinion that through the institution of stormwater improvements (water quality and storage ponds), stormwater runoff issues in the area will be addressed.

6. Water and Sewer

Potable water will be supplied by the Town of New Windsor Water District #9. Based on conversations with the Town Engineer and review of current information, there appears to be sufficient water capacity to service the proposed development. No district expansion or new supply lines are required, but there will be new water lines constructed on the site that will connect to existing Town water lines. Some existing Town water lines may require demolition or relocation as a result of the proposed development. New or relocated lines will be designed to maintain capacity for any upstream water users serviced by the affected water lines.

Sanitary sewer service will be provided by the Town of New Windsor Sewer District #20. Based on conversations with the Town Engineer and review of current information, there is sufficient sewer capacity to service the proposed development. No district expansion or new district sanitary lines will be

required, but new sewer lines will be constructed on the site that will connect to existing Town sewer lines. Some existing Town sewer lines will require demolition or relocation as a result of the proposed development. New or relocated sewer lines will be designed to maintain capacity for any upstream sewer users serviced by the affected sewer lines.

The improvements constructed for this project are likely to help reduce infiltration issues. Based on the flow and quality of the wastewater to be generated for this project, the wastewater treatment plant has apparent capacity to accept the waste from the proposed facilities. The applicant is working with the Town of New Windsor in getting this capacity allocated for this project.

7. Wetlands, Streams, Water bodies and aquifers

The EAF Mapper indicates that there may be federally regulated wetlands or other water bodies in the vicinity of the site. Wetland delineations were completed for the NY International Plaza EIS, and small isolated federal wetlands were identified throughout the site. No federal wetlands were identified within the areas that would be disturbed as a result of this project. The applicant is having this information updated and if the applicant proposes any work within any areas likely to be classified as wetlands, an updated delineation will be completed.

The EAF Mapper also identifies a Principal Aquifer adjacent to the project site. The attached map, entitled, "Existing Conditions With Conceptual Plan" shows the location of this aquifer, which is west of the proposed project area. No work is proposed within the aquifer area.

8. Air emissions

The project components include a hotel, restaurants, retail, and entertainment uses. The only significant air emissions that will be generated from the site itself will be from the HVAC equipment used to heat and cool the buildings. The project will also include a standby generator, which would only be used in the event of a power failure. The project and the generator will not require an air permit. The project will generate substantial traffic, and a separate report on traffic and associated air impacts will address this issue.

9. Traffic

As described in the project description, the action includes development of a Casino with Hotel and Event Center having 3,600 gaming positions as well as a 140,000 square feet Outlet Mall Shopping Center. As illustrated in the Figure entitled "Site Access", primary access to the facility would be via I-84 and International Boulevard. We anticipate that 85% of site generated traffic would utilize this route. Secondary access to the site would be via NY Route 207 and Breunig Road. Accordingly, the remaining 15% of site generated traffic would utilize this secondary access route.

Access to the site would be via four (4) site entrance driveways as follows:

- Main Casino Entrance and International Boulevard- This would be a four leg intersection. The minor legs would include the main entrance to the casino with the opposite leg accessing the future retail development. We anticipate dedicated left turn lanes for each approach.
- Secondary Casino Entrance and Breunig Road- This would be a three leg intersection. The minor leg would be the Secondary Casino Entrance.
- Back of House Service Road and International Boulevard- This would be a three leg intersection with the minor leg servicing as access to the event center back of house.
- Back of House Service Road and Breunig Road- This would be a three leg intersection with the minor leg servicing as access to the casino back of house as well as the bus parking lot.

The need for signalization at these intersections would be determined following six months of casino operation. The applicant is committed to perform a traffic signal warrant analysis on site entrance driveways. Based on the results, traffic signals would be installed by the applicant at intersections that meet signal warrants. In addition to the site entrance driveways, a signal warrant analysis also will be performed for the intersection of International Boulevard and Drury Lane. The applicant will install the appropriate signal improvements should this analysis demonstrate that a signal is warranted at this location.

Trip Generation

Trip generation calculations associated with the proposed development have been developed. Separate calculations are presented for the casino based on gaming positions and the retail center based on gross leasable area. Results indicate the overall number of trips for the proposed development would be 2,470 trips during the Weekday PM Peak.

The Traffic Impact Study that was prepared for the New York International Plaza Re-Development provide an assessment of traffic impacts associated with the 2.5 million square feet of mixed use development. The design year used for this Study was 2015. This Traffic Impact Study was utilized as the basis for the Positive Findings issued by the Town of New Windsor for the Re-Development Project.

Trip generation calculations for the re-development of the International Plaza would result in 3,150 trips during the Weekday PM Peak. By comparison, the proposed casino development will generate approximately 680 or 20% fewer trips during the Weekday PM Peak.

The applicant is updating traffic information to confirm this and will be working with the NYS Department of Transportation and the Town's Transportation consultant to further analyze the traffic situation.

Public Transit

The Newburgh Beacon Bus Corporation operates the Newburgh Beacon Stewart Airport Shuttle which connects Stewart International Airport with downtown Newburgh and the Metro-North Railroad Beacon Station on the east side of the Hudson River. Beacon Station is on Metro-North's Hudson Line, which provides hourly service to and from Grand Central Terminal in midtown Manhattan.

10. Contamination/ remediation

The EAF Mapper indicates that it is possible that there has been a spill or other remediation site within or adjacent to the project area. Our research noted that two remediation sites (C336067 and C336022) are nearby, but neither site is within the project area. Site C336067 was a Brownfield Cleanup Program (BCP) application. The site, which is approximately 4.358 acres in size, is owned by the NYS Department of Transportation and is located on the Stewart International Airport property. Potential contaminants are petroleum, SVOCs and metals, as well as possible soil gas. The BCP application was denied because a portion of the site is being addressed under a Spill Response stipulation agreement.

Site C336022 is also owned by NYS DOT. It is a very small (less than one acre) site that was used in the past for pesticide burial. An investigation led to materials being removed from the site, and a Record of Decision was signed in 2000. The New York Air National Guard completed groundwater monitoring at three monitoring wells from 2000 to 2005. Pesticides were not detected in concentrations exceeding NYS DEC groundwater standards during any of the sampling at two of the wells. While some pesticides were found in the third well, it was determined that they were not associated with the site, and were to be handled separately. The DEC determined that following the Remedial Investigation, the remediation of the site was completed. No further monitoring or remedial action was required, and deed restrictions were not needed. There are no institutional controls or site management required for Site C336022.

According to the Town and the prior EIS, there are no institutional controls limiting uses on the property. It is noted that there may be asbestos and/or lead located in existing structures. Appropriate control measures would be used when these existing structures are demolished, and any hazardous materials would be removed in conformance with all applicable regulations.

11. Historic/ Archaeological

A Phase IB Cultural Resources Investigation was completed as part of the NY International Plaza EIS, covering approximately 100 acres. One historic period site was identified, which included the historic Sayre-McGregor house and two subsurface artifact concentrations. An earlier Phase IA investigation determined that the Sayre-McGregor house was not eligible to the National Register of Historic Places. Furthermore, the home is located west of this project site. The Phase IB investigation determined that the two subsurface artifact concentrations were best described as fill material, and that the nature and context of the materials does not meet standards of meriting protection. No further archaeological investigations were recommended.

12. Adjacent Resources

There are resources located on lands adjacent to the project site, some of which have been discussed, above. These resources include:

- Aquifer
- Remediated Sites
- Historic/ Archaeological resources
- Stewart State Forest (west of the property)

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 3
21 South Putt Corners Road, New Paltz, New York 12561-1620
Phone: (845) 256-3054 • FAX: (845) 255-4659
Website: www.dec.ny.gov

m Blythe

Joe Martens
Commissioner

RECEIVED
MAY 14 2014
...isor
...SORS OFFICE

May 9, 2014

George A. Green, Supervisor
Town of New Windsor
555 Union Avenue
New Windsor, NY 12553

RE: SEQR Review: Greenetrack Inc.at New Windsor – Development of a casino resort
Project ID: **5157**
Town of New Windsor, Orange County

Dear Mr. Green:

We have reviewed the SEQR lead agency coordination request for the above referenced project which our office received on April 16, 2014.

LEAD AGENCY DESIGNATION
The Department has no objection to the Town of New Windsor Town Board assuming lead agency status for this project.

DEPARTMENT JURISDICTION

Protection of Waters

The following stream is located within or near the site you indicated:

Name	Class	DEC Water Index Number	Status
Subtributary of Lake Washington	[A]	H-P225-1-3-3	[Protected]

☒ A Protection of Waters permit is required to physically disturb the bed or banks (up to 50 feet from stream) of any streams identified above as "protected." A permit is not required to disturb the bed or banks of "non-protected" streams.

The project sponsor is responsible for ensuring that work shall not pollute any stream or waterbody. Care shall be taken to stabilize any disturbed areas promptly after construction, and all necessary precautions shall be taken to prevent contamination of the stream or waterbody by silt, sediment, fuels, solvents, lubricants, or any other pollutant associated with the project.

Freshwater Wetlands

☒ The project/site is not within a New York State protected Freshwater Wetland. However, please contact the United States Army Corps of Engineers in New York City, telephone 917-790-8411, for any permitting they might require.

State-listed Species

☒ DEC has reviewed the State's Master Habitat Databank (MHDB) records. We have determined that the site is located near record(s) of the following state-listed species:

Name	Status
Upland sandpiper	[Endangered]
Indiana bat	[Endangered]

-OVER PLEASE -

The project site does not contain suitable habitat for Upland sandpiper. Therefore, no further review is necessary for potential impacts to this species.

However, the potential impacts of the proposed project on Indiana bat should be fully evaluated during the review of the project pursuant to SEQR. In addition, removal of trees greater than 4 inches diameter at breast height should be restricted to the period between October 1 and March 31 to adequately mitigate any potential impacts. For further guidance on this matter, please contact the undersigned analyst.

State Pollutant Discharge Elimination System (SPDES) for Construction Activity Stormwater Discharges

☒ Stormwater discharges require a SPDES Stormwater permit from this Department if they either:

- occur at industrial facilities and contain either toxic contaminants or priority pollutants OR
- result from construction projects involving the disturbance of 5000 square feet or more of land within the NYC Department of Environmental Protection (NYCDEP) East of Hudson Watershed or for proposed disturbance of 1 acre or more of land outside the NYCDEP Watershed

☒ This project may be covered by one of two Statewide General Permits or may require an individual permit. For information on stormwater and the general permits, see the DEC website at http://www.dec.ny.gov/chemical/8468.html. If this project requires a SPDES Stormwater Permit and this site is within an MS4 area (Municipal Separate Storm Sewer System), the stormwater plan must be reviewed and accepted by the municipality and the MS-4 Acceptance Form must be submitted to the Department. If the site is not within an MS4 area and other DEC permits are required, the sponsor must provide two copies of the required Stormwater Pollution Prevention Plan (SWPPP) with their permit application for DEC review and approval. Other permits will not be issued until the SWPPP is approved. Authorization for coverage under the SPDES General Permit is not granted until the Department issues any other necessary DEC permits.

OTHER

Please note that this letter only addresses the requirements for the following permits from the Department:
☒ Protection of Waters ☒ Master Habitat Databank ☒ Freshwater Wetlands ☒ SPDES Stormwater

Other permits from this Department or other agencies may be required for projects conducted on this property now or in the future. Also, regulations applicable to the location subject to this determination occasionally are revised and you should, therefore, verify the need for permits if this project is delayed or postponed. This determination regarding the need for permits will remain effective for a maximum of one year unless you are otherwise notified.

Please contact this office if you have questions regarding the above information. Thank you.

Sincerely,

Jean McAvoy
Region 3, Division of Environmental Permits
Telephone: 845/256-3165
Email: jvmcavoy@gw.dec.state.ny.us

TurnerMillerGroup
planning consensus community

Land use, economic development, and environmental planning
Facilitating consensus among diverse constituents
Creating sustainable communities

May 8, 2014

Town of New Windsor Planning Board
Attn: Genero Argenio, Chairman
555 Union Avenue
New Windsor, New York 12553

Re: Greenetrack Casino // New Windsor

Dear Chairman Argenio and Planning Board Members:

On April 14, 2014 the Town Board declared their intent to serve as SEQR lead agency for the environmental review of the proposed Greenetrack casino project to be located on Town-owned property within Stewart Airport.

At the time that the Town Board circulated for lead agency, it was understood that local zoning land use laws would not apply to gaming facilities to be licensed by New York pursuant to the Upstate NY Gaming Economic Development Act of 2013. Since that time, the siting board of the New York Gaming Commission has clarified that local land use laws do apply to gaming facilities, with the actual gaming activity itself as being the only activity exempt from local land use laws. All other aspects of a gaming facility, such as the buildings and other site improvements, must obtain site plan approval.

Enclosed is an updated copy of the lead agency notice and Part I of the Long Environmental Assessment Form. The Town Board asks that you review this and respond to it no later than May 15.

Thank you.

Kristen O'Donnell, Town Planning Consultant
TURNER MILLER GROUP

STATE ENVIRONMENTAL QUALITY REVIEW ACT
("SEQRA")

NOTICE OF INTENT
ESTABLISHMENT OF SEQRA LEAD AGENCY
TOWN OF NEW WINDSOR TOWN BOARD

TO: Involved and interested Agencies (see attached list)

DATED: April 14, 2014

THIS NOTICE is issued pursuant to Part 617.6(b) of the implementing regulations pertaining to Article 8 of the State Environmental Conservation Law (State Environmental Quality Review Act).

PLEASE TAKE NOTICE that the Town of New Windsor Town Board has determined that it is willing to act as SEQRA Lead Agency for environmental review of the proposed action described below and shall coordinate environmental review pursuant to Article 8 of the ECL and Implementing Regulations (6 NYCRR Part 617).

Name of Action: Greenetrack, Inc. at New Windsor

Status: Type I

Description of Action: Development of a casino resort

The Project consists of the following:

Greenetrack Inc. is proposing the following: The project entails the construction of a full-service Gaming Facility pursuant to the Upstate New York Gaming Economic Development Act of 2013, along with associated amenities. The applicant proposes acquisition by Option and Lease Agreement of approximately 145 acres of land currently owned by the Town of New Windsor. The land is located adjacent to Stewart International Airport in the Town of New Windsor, Orange County, New York. The term of the lease is proposed to be 99 years. Mapping attached to the EAF depicts the project general location, the lands to be leased, environmental features in the vicinity, a conceptual layout of the proposed project and architectural renderings.

The Gaming Facility will be located on approximately 60 acres of the leased land. The facility will include the following elements:

- Casino with 3,000 slot machines and 75 gaming tables, including high limit gaming. The gaming floor will be approximately 80,000 square feet in size.
- A 14-story tower hotel with 350 guestrooms and associated amenities (e.g. business center, lobby, banquet facility, etc.)
- Spa and fitness amenities, including an indoor/outdoor (swim-out) swimming pool
- Restaurants and eating facilities in a range of cuisines and price levels

- Entertainment venues, including a center bar, a jazz lounge, a dance club, a movie theater, a wine cellar and cigar bar
- Conference center facilities, including a main ballroom
- Event center/theater for live performances (2,200 seat capacity)
- Parking facilities, including a multi-story parking garage, covered valet parking and surface parking lots
- Potential future development of retail space (approximately 140,000 square feet)
- Related facilities in support of the overall site development (access roadways, landscaping, etc.)

The main facility will be built south of International Boulevard; west of Breunig Way, and east of Airport Center Drive. Potential future retail development would be north of International Boulevard. The property is mostly vacant land, although there are currently some buildings on the site that would be demolished. The Orange County Police Chief offices at 520 Sue Kelly Avenue are located at the southern end of the property are proposed to be redeveloped, and will need to be relocated. Additional buildings on the site that would be demolished are largely vacant, and consist mainly of former barracks and other former Air National Guard facilities.

In support of the development, the applicant will install all necessary infrastructure, including water and sewer lines, a stormwater management facility to address site drainage, site access and circulation and landscaping and other improvements. The main facility will be designed to take advantage of the site's topography and views of the surrounding area, with varying levels along the hill side on the western edge of the property.

Approximately 40 acres would remain undeveloped. The project is anticipated to result in significant economic benefits, including up to 1,500 temporary construction jobs and approximately 1,800 to 2,250 permanent jobs in the casino, hotel, restaurants and related facilities. The project will also generate significant local revenues from property, hotel and sale taxes, as well as State revenue.

The project is consistent with the Mid-Hudson Regional Economic Development Council Strategic Plan, which calls for economic development associated with Stewart International Airport, and capitalizing on the region's traditional strength in tourism. The creation of "destination hotels" is specifically cited as one of the strategies recommended in support of tourism in the region. The report continues, in reference to destination lodging: "Where appropriate, the viability of casino gambling should also be considered." (p. 41). The Orange County Comprehensive Plan, last updated in 2010, identifies the project site and the surrounding area as a "Priority Growth Area" for economic development based on its available utilities, highway access and public transportation.

The project is also consistent with the Town of New Windsor 2009 Comprehensive Plan Update, which calls for more intensive development surrounding Stewart International Airport in support of economic development and job creation. The area

around the airport is identified as appropriate for hotels, conference centers and other related "destination uses that would benefit from the Airport and surrounding regional highway system, and uses that will serve and support the immediate region." (p. 20).

An important aspect of the Project review is that the project site was the subject of a prior proposed development project, known as New York International Plaza. A complete EIS was prepared assessing potential impacts associated with that project, with the DEIS accepted in April 2003 and the FEIS in July of that year. The EIS process resulted in a Positive Findings (a copy is attached to the EAF). The Town has been using the EIS and the Findings Statement to evaluate projects proposed on this site. This project has utilized information from the NY International Plaza EIS, supplemented with more current information.

Location:	The Project Site is located in the Town of New Windsor, adjacent to Stewart International Airport, on International Boulevard near Breuing Way
Contact Person :	George A. Green, Town Supervisor 555 Union Avenue New Windsor, NY 12553 (845) 563-4610

PLEASE TAKE FURTHER NOTICE that unless any involved agency objects to this determination and Intent of Lead Agency status within thirty (30) calendar days of the above date, the Town of New Windsor Town Board shall be deemed Lead Agency.

Dated: New Windsor, New York
April 14, 2014

INVOLVED AND INTERESTED AGENCIES

This notice has been sent to the following agencies

INVOLVED AGENCIES:

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-0001

New York State Department of Environmental Conservation
Region 3
21 South Putt Corners Road
New Paltz, New York 12561-1696

Orange County Health Department, Division of Environmental Permits
Attn: Edwin Sims, PE, Acting Director
1887 County Building
124 Main Street
Goshen, New York 10924

New York State Department of Transportation
Region 8
Eleanor Roosevelt State Office Building
4 Burnett Boulevard
Poughkeepsie, New York 12603

New York State Gaming Commission
P.O. Box 7500
Schenectady, New York 12301-7500

Town of New Windsor Planning Board
Attn: Genero Argenio, Chairman
555 Union Avenue
New Windsor, New York 12553

INTERESTED AGENCIES:

Orange County of New York
Attn: Steven M. Neuhaus, County Executive
40 Matthews Street, Suite 104
Goshen, New York 10924

Orange County Planning Department
Attn: David Church, Commissioner
1887 County Building
124 Main Street
Goshen, New York 10924

Town of Newburgh
Attn: Gil Piaquadio
Deputy Supervisor Acting as Supervisor
1496 Route 300
Newburgh, NY 12550

City of Newburgh
Attn: Judy Kennedy, Mayor
83 Broadway
Newburgh, New York 12550

Town of Montgomery
Attn: Michael Hayes, Town Supervisor
110 Bracken Road
Montgomery, New York 12549

Town of New Windsor Police Department
Attn: Michael C. Biasotti, Chief of Police
555 Union Avenue
New Windsor, New York 12553

Vails Gate Fire Department
Attn: President Stephen Bedetti
P.O. Box 101
Vails Gate, New York 12584

Washingtonville Central School District
Annt: Roberta Greene, Superintendent
52 West Main Street
Washingtonville, New York 10992

MTA - Metro North
Joseph Giulietti
President
347 Madison Avenue
New York, New York 10017-3739

New York City Department of Environmental Protection
Attn: Emily Lloyd, Commissioner
59-17 Junction Boulevard, 13th Floor
Flushing, NY 11373

As Amended by the Town on May 8, 2014

SEQR LEAD AGENCY
COORDINATED REVIEW MAILING

PROJECT:
GREENETRACK INC. AT NEW WINDSOR

REQUESTED LEAD AGENCY:
Town Board, Town of New Windsor
555 Union Avenue
New Windsor, New York 12553

APPLICANT:
Greenetrack, Inc.
C/O 677 Broadway
Suite 301
Albany, New York 12207

APPLICANT'S REPRESENTATIVES:
Hodgson Russ LLP
677 Broadway
Suite 301
Albany, New York 12207
ATTN: Robert McLaughlin, Esq.

Wendel WD Architecture, Engineering, Surveying & Landscape Architecture, P.C.
140 John James Audubon Parkway
Suite 201
Amherst, New York 14228
ATTN: Andrew C. Reilly, PE, AICP

WATG/Designing Destinations
8001 Irvine Center Drive
Suite 500
Irvine, CA 92618

Lead Agency Mailing
Greenetrack, Inc. at New Windsor

1. Full Environmental Assessment Form (EAF) – with DEC generated mapping (EAF Mapper)

2. EAF Part F – Additional Information

3. Project Description

4. Mapping
   i. USGS Project Location Map
   ii. Properties to be Leased
   iii. Existing Conditions with Conceptual Plan
   iv. Conceptual Site Layout
   v. Site Access

5. Renderings

6. Findings Statement (New York International Plaza- previously approved project)

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Sponsor Information.

Name of Action or Project: Greenetrack, Inc. at New Windsor		
Project Location (describe, and attach a general location map): International Boulevard near Breunig Way at Stewart International Airport		
Brief Description of Proposed Action (include purpose or need): The construction of a gaming facility and related amenities pursuant to the Upstate New York Gaming Economic Development Act of 2013. (See attached full Project Description)		
Name of Applicant/Sponsor: Greenetrack, Inc.	Telephone: 205-372-9318 E-Mail: HERLECIAHER@aol.com	
Address: c/o 677 Broadway		
City/PO: Albany	State: New York	Zip Code: 12207
Project Contact (if not same as sponsor; give name and title/role): Robert J. McLaughlin	Telephone: 518-433-2431 E-Mail: RMCLAUGHLIN@HODGSONRUSS.COM	
Address: 677 Broadway		
City/PO: Albany	State: New York	Zip Code: 12207
Property Owner (if not same as sponsor): Town of New Windsor	Telephone: 845-565-7000 E-Mail:	
Address: 555 Union Avenue		
City/PO: New Windsor	State: New York	Zip Code: 12553

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Council, Town Board, or Village Board of Trustees ☑Yes☐No	Town Board- Leasing of Property and amendment of Town Zoning	April 2014
b. City, Town or Village Planning Board or Commission ☑Yes☐No	Site Plan Approval	TBD
c. City Council, Town or Village Zoning Board of Appeals ☐Yes☑No		
d. Other local agencies ☑Yes☐No	Town Water/Sewer Districts	May 2014
e. County agencies ☑Yes☐No	Health Department	
f. Regional agencies ☐Yes☑No		
g. State agencies ☑Yes☐No	DEC- SPDES, DOT-road improvements NYS Gaming Commission	May and June 2014
h. Federal agencies ☑Yes☐No	US ACOE- wetlands JD FAA adn DOD- airport related approvals	May and June 2014

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☑Yes☐No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes☑No

If Yes, identify the plan(s):

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes☑No

If Yes, identify the plan(s):

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Airport (AP); use is allowed per Upstate New York Gaming Economic Development Act of 2013

b. Is the use permitted or allowed by a special or conditional use permit? ☑ Yes ☐ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site? _____

C.4. Existing community services.

a. In what school district is the project site located? Newburgh Enlarged City School District

b. What police or other public protection forces serve the project site?
Town of New Windsor Police Department

c. Which fire protection and emergency medical services serve the project site?
Vails Gate Fire Department and mutual aid

d. What parks serve the project site?
Town of New Windsor park system (east of site); Stewart State Forest and Crestview Lake Park (west of site)

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?
_____

b. a. Total acreage of the site of the proposed action? 145 acres
b. Total acreage to be physically disturbed? 43.4 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 145 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
_____
ii. Is a cluster/conservation layout proposed? ☐ Yes ☑ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? ☐Yes ☑No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No

If Yes,

i. Total number of structures 4

ii. Dimensions (in feet) of largest proposed structure: 200 height; 420 width; and 460 length

iii. Approximate extent of building space to be heated or cooled: 500,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑Yes ☐No

If Yes,

i. Purpose of the impoundment: Stormwater management/ drainage

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑Other specify: Drainage from site

iii. If other than water, identify the type of impounded/contained liquids and their source. N/A

iv. Approximate size of the proposed impoundment. Volume: 6.3 million gallons; surface area: 3.7 acres

v. Dimensions of the proposed dam or impounding structure: N/A height; 600' length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete): Excavation

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐Yes ☑No

If Yes:

i. What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No

If yes, describe. _____

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐Yes ☐No

ix. Summarize site reclamation goals and plan: _____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres: _____

iii. Will proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe: _____

iv. Will proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No
If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____
- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 180,000 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: Town of New Windsor WD-9
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____
- Source(s) of supply for the district: _____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐ Yes ☑No
If, Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: _____

v. If a public water supply will not be used, describe plans to provide water supply for the project: N/A

vi. If water supply will be from wells (public or private), maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 180,000 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): _____

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Town of New Windsor wastewater treatment plant
- Name of district: Town of New Windsor SD-20
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will line extension within an existing district be necessary to serve the project? ☐Yes ☑No

  If Yes:
  - Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:
- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge, or describe subsurface disposal plans):

N/A

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

Best management practices will be used to capture, recycle and/or reuse liquid waste

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 17.5 acres (impervious surface)

_____ Square feet or 145 acres (parcel size)

ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

On-site stormwater management facility

- If to surface waters, identify receiving water bodies or wetlands: _____

  N/A
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☑Yes ☐No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

Delivery vehicles, buses and cars to facility

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

Standby generator - to be used in the event of a power outage

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☑Yes ☐No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐Morning ☐Evening ☑Weekend ☐Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of semi-trailer truck trips/day: 20

iii. Parking spaces: Existing 0 Proposed 3,680 Net increase/decrease +3,680

iv. Does the proposed action include any shared use parking? ☐Yes ☑No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

See discussion of anticipated transportation changes in attachment

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☑Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☑Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☑No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action:

+/- 42,000,000 KWH/year

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

Grid / Local Utility (Central Hudson)

iii. Will the proposed action require a new, or an upgrade to, an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7 am to 7 pm
- Saturday: None
- Sunday: None
- Holidays: None

ii. During Operations:

- Monday - Friday: All (24-hour)
- Saturday: All (24-hour)
- Sunday: All (24-hour)
- Holidays: All (24-hour)

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Noise associated with construction will occur during working hours; operational noise related to traffic.

ii. Will proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n.. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Approximately 40 light fixtures to light parking areas and buildings, with LED lamps, approximately 40 feet in height; and Building Lighting.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☑ Yes ☐ No

If Yes:

i. Product(s) to be stored Diesel fuel for standby generators (approximately 4,000 - 5,000 gallons)

ii. Volume(s) 4,500 per unit time year (e.g., month, year)

iii. Generally describe proposed storage facilities:

Above ground storage tanks or "belly tanks" with required containment

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Pesticides for landscaping

ii. Will the proposed action use Integrated Pest Management Practices? ☑ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: +/- 283 tons per month over 2 years (unit of time)
- Operation : +/- 123 tons per month (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: Existing concrete on site will be reused as fill; additional best management practices will be used to minimize amount of solid waste generated during construction.
- Operation: Applicant will use recycling, reuse and other waste reduction policies to minimize amount of solid waste generated during on-going operations.

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: Waste will be hauled to Newburgh Waste Transfer Station to be sent to a State licensed landfill.
- Operation: Waste will be collected by a local hauler and taken to Newburgh Waste Transfer Station to be sent to a State licensed landfill.

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility: _____

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Airport, military base

ii. If mix of uses, generally describe: _____

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	26.2	43.7	+17.5
• Forested	41.8	38.0	-3.8
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	73.5	56.2	-17.3
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0.4	4.0	+3.6
• Wetlands (freshwater or tidal)	1.38	1.38	0
• Non-vegetated (bare rock, earth or fill)	1.7	1.7	0
• Other Describe: _____			

c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No

i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐Yes ☑No

If Yes,

i. Identify Facilities:

_____

e. Does the project site contain an existing dam? ☐Yes ☑No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____

iii. Provide date and summarize results of last inspection:

_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No

If Yes:

i. Has the facility been formally closed? ☐Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____

iii. Describe any development constraints due to the prior solid waste activities: _____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☑Yes ☐ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☑Yes ☐No

☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____

☑ Yes – Environmental Site Remediation database — Provide DEC ID number(s): C336067; C336022

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures:

N/A

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No

If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____

v. Is the project site subject to an institutional control limiting property uses? ☐Yes ☑No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐Yes ☐No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? +/- 60 feet

b. Are there bedrock outcroppings on the project site? ☐Yes ☑No
If Yes, what proportion of the site is comprised of bedrock outcroppings? 0 %

c. Predominant soil type(s) present on project site:

MdB	32 %
MdC	50 %
MdD	18 %

d. What is the average depth to the water table on the project site? Average: +/- 7 - 12 feet

e. Drainage status of project site soils:
- ☐ Well Drained: ___ % of site
- ☑ Moderately Well Drained: 100 % of site
- ☐ Poorly Drained ___ % of site

f. Approximate proportion of proposed action site with slopes:
- ☑ 0-10%: 57 % of site
- ☑ 10-15%: 25 % of site
- ☑ 15% or greater: 18 % of site

g. Are there any unique geologic features on the project site? ☐Yes ☑No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑Yes ☐No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑Yes ☐No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑Yes ☐No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name 862-90 Classification A
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal wetland Approximate Size 1.32 acres
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐Yes ☑No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐Yes ☑No

j. Is the project site in the 100 year Floodplain? ☐Yes ☑No

k. Is the project site in the 500 year Floodplain? ☐Yes ☑No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☑Yes ☐No
If Yes:

i. Name of aquifer: Principal Aquifer

m. Identify the predominant wildlife species that occupy or use the project site:
General urban/ suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation): _____
ii. Source(s) of description or evaluation: _____
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☑Yes ☐No

Potential for Upland Sandpiper exists. A habitat assessment conducted for the New York International Plaza EIS found no evidence of their presence (e.g. nests, habitat, sightings) and determined that there would be no impacts to this species from development of the property.

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use: _____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number: _____

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site? _____
ii. Source(s) of soil rating(s): _____

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name: _____
ii. Basis for designation: _____
iii. Designating agency and date: _____

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on, or has been nominated by the NYS Board of Historic Preservation for inclusion on, the State or National Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based: _____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☑ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☑ Yes ☐ No

If Yes:

i. Identify resource: Stewart State Forest

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): State forest land

iii. Distance between project and resource: less than 1 miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

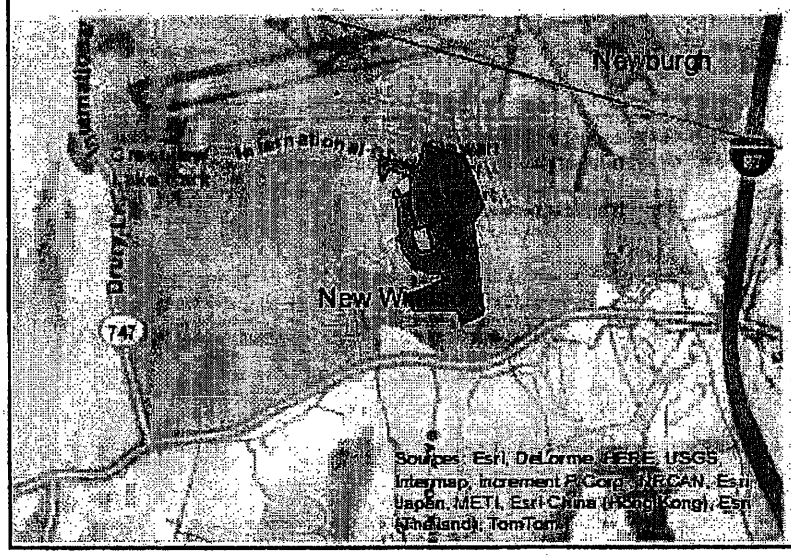
Applicant/Sponsor Name Andrew C. Reilly, P.E., AICP (Sponsor Rep) Date April 9, 2014

Signature _____ Title Environmental Consultant

PRINT FORM

EAF Mapper Summary Report

Friday, April 11, 2014 1:51 PM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Stream Name]	862-90
E.2.h.iv [Surface Water Features - Stream Classification]	A
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	Yes

E.2.l. [Aquifer Names]	Principal Aquifer
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	Yes
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National Register of Historic Places]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	No
E.3.i. [Designated River Corridor]	No

Part F: EAF Additional Information

1. New York International Plaza EIS

The project site was the subject of a prior proposed development project, known as New York International Plaza. A complete EIS was prepared assessing potential impacts associated with that project, with the DEIS accepted in April 2003 and the FEIS in July of that year. The EIS process resulted in a Positive Findings (see attached Findings Statement). The Town has been using the EIS and the Findings Statement to evaluate projects proposed on this site. This project has utilized information from the NY International Plaza EIS, supplemented with more current information.

2. Involved and Interested Agencies

The following agencies have been preliminarily identified as Involved Agencies for this project:

a. New Windsor Town Board: Lead Agency for the lease of the property to Greenetrack, Inc. The Town Board will also coordinate internally with the Town Sewer District, Water Districts and Highway Department.

b. New York State Department of Environmental Conservation: SPDES permit and potentially other permits or approvals.

c. Orange County Health Department: potential relocation of water lines and sewer lines; and connections into existing and relocated systems.

d. New York State Department of Transportation: connection and potential improvements to the State Highway system.

e. New York State Gaming Commission: approval of application for gaming license.

The following agencies are Interested Agencies, who will be included in the Coordinated Review mailing.

a. Orange County
b. Town of Newburgh
c. City of Newburgh
d. Town of Montgomery
e. Emergency Service Providers (Town of New Windsor Police Department; Vails Gate Fire Department)
f. Newburgh Enlarged School District
g. MTA - Metro North
h. New York City Department of Environmental Protection

3. Conformance with zoning and the Town of New Windsor Comprehensive Plan

The site is currently zoned Airport (AP), which allows indoor and outdoor recreational facilities and structures, hotels, convention and conference centers, and offices, as well as more intensive uses such as manufacturing.

The project is also covered under the Upstate New York Gaming Economic Development Act of 2013, passed by the New York State Legislature, which provides that if the site is approved as a location for gaming, the proposed uses are deemed to be allowable uses.

The Comprehensive Plan for the Town of New Windsor has identified the lands around Stewart International Airport as a location for economic development and job creation. It specifically recommends that the Town "should encourage airport related development such as hotels, conference centers" and other uses. It continues that new development "should reflect a combination of destination uses that would benefit from the Airport and surrounding regional highway system, and uses that will serve and support the immediate region." The proposed use is consistent with these goals and recommendations.

4. Community Services

The applicant and Town have begun communicating with police, fire and other emergency service providers to see if services are adequate for the proposed facility. Initial responses suggest that community services would be sufficient with some mitigation.

5. Stormwater

The proposed project will meet all State and local requirements for stormwater management. It is the applicant's opinion that through the institution of stormwater improvements (water quality and storage ponds), stormwater runoff issues in the area will be addressed.

6. Water and Sewer

Potable water will be supplied by the Town of New Windsor Water District #9. Based on conversations with the Town Engineer and review of current information, there appears to be sufficient water capacity to service the proposed development. No district expansion or new supply lines are required, but there will be new water lines constructed on the site that will connect to existing Town water lines. Some existing Town water lines may require demolition or relocation as a result of the proposed development. New or relocated lines will be designed to maintain capacity for any upstream water users serviced by the affected water lines.

Sanitary sewer service will be provided by the Town of New Windsor Sewer District #20. Based on conversations with the Town Engineer and review of current information, there is sufficient sewer capacity to service the proposed development. No district expansion or new distrit sanitary lines will be

required, but new sewer lines will be constructed on the site that will connect to existing Town sewer lines. Some existing Town sewer lines will require demolition or relocation as a result of the proposed development. New or relocated sewer lines will be designed to maintain capacity for any upstream sewer users serviced by the affected sewer lines.

The improvements constructed for this project are likely to help reduce infiltration issues. Based on the flow and quality of the wastewater to be generated for this project, the wastewater treatment plant has apparent capacity to accept the waste from the proposed facilities. The applicant is working with the Town of New Windsor in getting this capacity allocated for this project.

7. Wetlands, Streams, Water bodies and aquifers

The EAF Mapper indicates that there may be federally regulated wetlands or other water bodies in the vicinity of the site. Wetland delineations were completed for the NY International Plaza EIS, and small isolated federal wetlands were identified throughout the site. No federal wetlands were identified within the areas that would be disturbed as a result of this project. The applicant is having this information updated and if the applicant proposes any work within any areas likely to be classified as wetlands, an updated delineation will be completed.

The EAF Mapper also identifies a Principal Aquifer adjacent to the project site. The attached map, entitled, "Existing Conditions With Conceptual Plan" shows the location of this aquifer, which is west of the proposed project area. No work is proposed within the aquifer area.

8. Air emissions

The project components include a hotel, restaurants, retail, and entertainment uses. The only significant air emissions that will be generated from the site itself will be from the HVAC equipment used to heat and cool the buildings. The project will also include a standby generator, which would only be used in the event of a power failure. The project and the generator will not require an air permit. The project will generate substantial traffic, and a separate report on traffic and associated air impacts will address this issue.

9. Traffic

As described in the project description, the action includes development of a Casino with Hotel and Event Center having 3,600 gaming positions as well as a 140,000 square feet Outlet Mall Shopping Center. As illustrated in the Figure entitled "Site Access", primary access to the facility would be via I-84 and International Boulevard. We anticipate that 85% of site generated traffic would utilize this route. Secondary access to the site would be via NY Route 207 and Breunig Road. Accordingly, the remaining 15% of site generated traffic would utilize this secondary access route.

Access to the site would be via four (4) site entrance driveways as follows:

- Main Casino Entrance and International Boulevard- This would be a four leg intersection. The minor legs would include the main entrance to the casino with the opposite leg accessing the future retail development. We anticipate dedicated left turn lanes for each approach.
- Secondary Casino Entrance and Breunig Road- This would be a three leg intersection. The minor leg would be the Secondary Casino Entrance.
- Back of House Service Road and International Boulevard- This would be a three leg intersection with the minor leg servicing as access to the event center back of house.
- Back of House Service Road and Breunig Road- This would be a three leg intersection with the minor leg servicing as access to the casino back of house as well as the bus parking lot.

The need for signalization at these intersections would be determined following six months of casino operation. The applicant is committed to perform a traffic signal warrant analysis on site entrance driveways. Based on the results, traffic signals would be installed by the applicant at intersections that meet signal warrants. In addition to the site entrance driveways, a signal warrant analysis also will be performed for the intersection of International Boulevard and Drury Lane. The applicant will install the appropriate signal improvements should this analysis demonstrate that a signal is warranted at this location.

Trip Generation

Trip generation calculations associated with the proposed development have been developed. Separate calculations are presented for the casino based on gaming positions and the retail center based on gross leasable area. Results indicate the overall number of trips for the proposed development would be 2,470 trips during the Weekday PM Peak.

The Traffic Impact Study that was prepared for the New York International Plaza Re-Development provide an assessment of traffic impacts associated with the 2.5 million square feet of mixed use development. The design year used for this Study was 2015. This Traffic Impact Study was utilized as the basis for the Positive Findings issued by the Town of New Windsor for the Re-Development Project.

Trip generation calculations for the re-development of the International Plaza would result in 3,150 trips during the Weekday PM Peak. By comparison, the proposed casino development will generate approximately 680 or 20% fewer trips during the Weekday PM Peak.

The applicant is updating traffic information to confirm this and will be working with the NYS Department of Transportation and the Town's Transportation consultant to further analyze the traffic situation.

Public Transit

The Newburgh Beacon Bus Corporation operates the Newburgh Beacon Stewart Airport Shuttle which connects Stewart International Airport with downtown Newburgh and the Metro-North Railroad Beacon Station on the east side of the Hudson River. Beacon Station is on Metro-North's Hudson Line, which provides hourly service to and from Grand Central Terminal in midtown Manhattan.

10. Contamination/ remediation

The EAF Mapper indicates that it is possible that there has been a spill or other remediation site within or adjacent to the project area. Our research noted that two remediation sites (C336067 and C336022) are nearby, but neither site is within the project area. Site C336067 was a Brownfield Cleanup Program (BCP) application. The site, which is approximately 4.358 acres in size, is owned by the NYS Department of Transportation and is located on the Stewart International Airport property. Potential contaminants are petroleum, SVOCs and metals, as well as possible soil gas. The BCP application was denied because a portion of the site is being addressed under a Spill Response stipulation agreement.

Site C336022 is also owned by NYS DOT. It is a very small (less than one acre) site that was used in the past for pesticide burial. An investigation led to materials being removed from the site, and a Record of Decision was signed in 2000. The New York Air National Guard completed groundwater monitoring at three monitoring wells from 2000 to 2005. Pesticides were not detected in concentrations exceeding NYS DEC groundwater standards during any of the sampling at two of the wells. While some pesticides were found in the third well, it was determined that they were not associated with the site, and were to be handled separately. The DEC determined that following the Remedial Investigation, the remediation of the site was completed. No further monitoring or remedial action was required, and deed restrictions were not needed. There are no institutional controls or site management required for Site C336022.

According to the Town and the prior EIS, there are no institutional controls limiting uses on the property. It is noted that there may be asbestos and/or lead located in existing structures. Appropriate control measures would be used when these existing structures are demolished, and any hazardous materials would be removed in conformance with all applicable regulations.

11. Historic/ Archaeological

A Phase IB Cultural Resources Investigation was completed as part of the NY International Plaza EIS, covering approximately 100 acres. One historic period site was identified, which included the historic Sayre-McGregor house and two subsurface artifact concentrations. An earlier Phase IA investigation determined that the Sayre-McGregor house was not eligible to the National Register of Historic Places. Furthermore, the home is located west of this project site. The Phase IB investigation determined that the two subsurface artifact concentrations were best described as fill material, and that the nature and context of the materials does not meet standards of meriting protection. No further archaeological investigations were recommended.

12. Adjacent Resources

There are resources located on lands adjacent to the project site, some of which have been discussed, above. These resources include:

- Aquifer
- Remediated Sites
- Historic/ Archaeological resources
- Stewart State Forest (west of the property)

PROJECT DESCRIPTION

The project entails the construction of a full-service Gaming Facility pursuant to the Upstate New York Gaming Economic Development Act of 2013, along with associated amenities. The applicant proposes acquisition by Option and Lease Agreement of approximately 145 acres of land currently owned by the Town of New Windsor. The land is located adjacent to Stewart International Airport in the Town of New Windsor, Orange County, New York. The term of the lease will be 99 years. The attached exhibits depict the project's general location, the lands to be leased, environmental features in the vicinity, a conceptual layout of the proposed project and architectural renderings.

The Gaming Facility will be located on approximately 60 acres of the leased land. The facility will include the following elements:

- Casino with 3,000 slot machines and 75 gaming tables, including high limit gaming. The gaming floor will be approximately 85,000 square feet in size.
- A 12 to 14-story tower hotel with 350 guestrooms and associated amenities (e.g. business center, lobby, banquet facility, etc.)
- Spa and fitness amenities, including an indoor/outdoor (swim-out) swimming pool
- Restaurants and eating facilities in a range of cuisines and price levels
- Entertainment venues, including a center bar, a jazz lounge, a dance club, a movie theater, a wine cellar and cigar bar
- Conference center facilities, including a main ballroom
- Event center/theater for live performances (2,200 seat capacity)
- Parking facilities, including a multi-story parking garage, covered valet parking and surface parking lots
- Potential future development of retail space
- Related facilities in support of the overall site development (access roadways, landscaping, etc.)

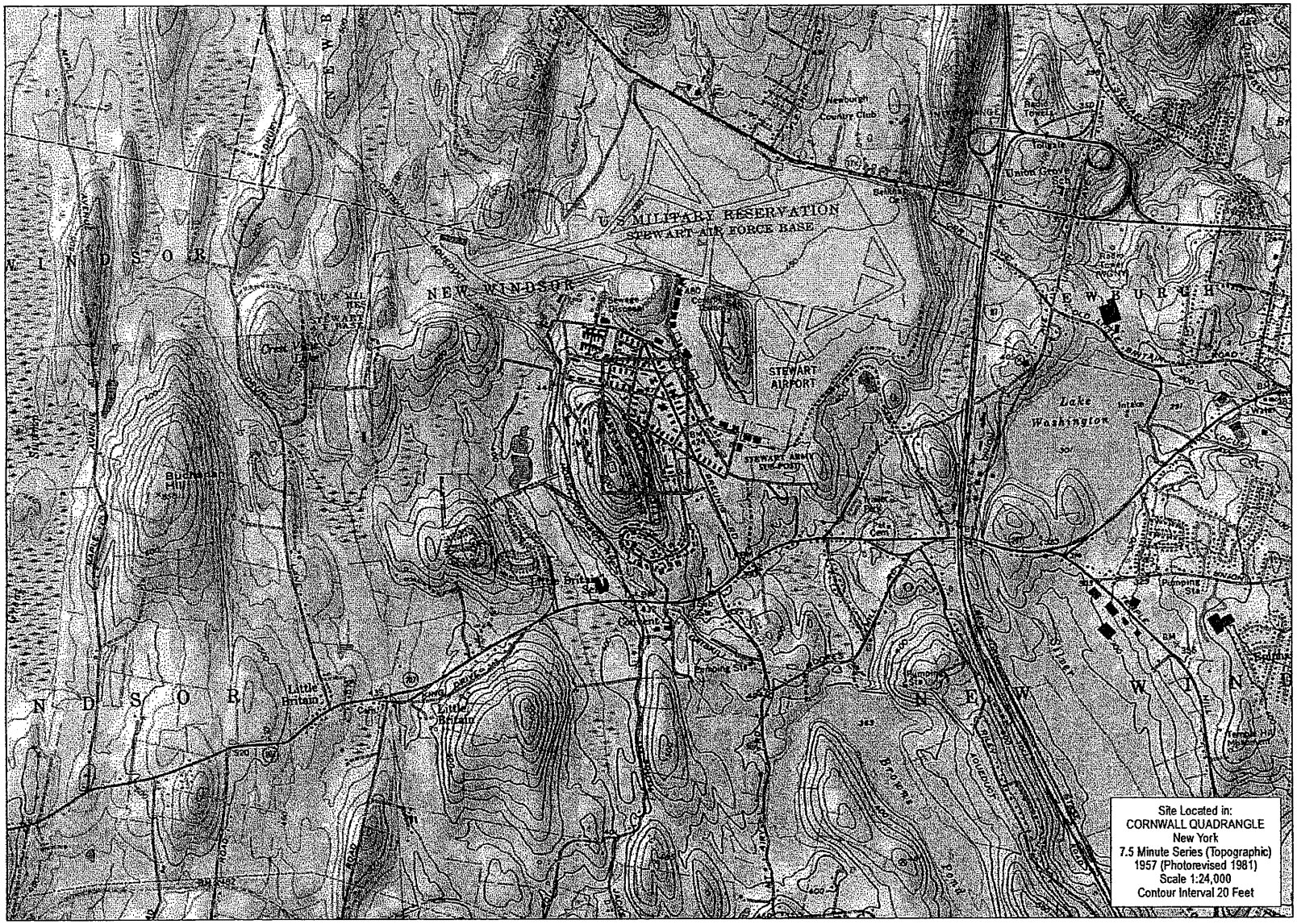
The main facility will be built south of International Boulevard; west of Breunig Way, and east of Airport Center Drive. Potential future retail development would be north of International Boulevard, and other areas would remain undeveloped. The property is mostly vacant land, although there are currently some buildings on the site that would be demolished. The Orange County Police Chief offices at 520 Sue Kelly Avenue are located at the southern end of the property to be redeveloped, and will need to be relocated. Additional buildings on the site that would be demolished are largely vacant, and consist mainly of former barracks and other former Air National Guard facilities.

In support of the development, the applicant will install all necessary infrastructure, including water and sewer lines, a stormwater management facility to address site drainage, site access and circulation and landscaping and other improvements. The main facility will be designed to take advantage of the site's topography and views of the surrounding area, with varying levels along the hill side on the western edge of the property. The remaining acreage would remain undeveloped.

The project is anticipated to result in significant economic benefits, including up to 1,500 temporary construction jobs and approximately 1,800 to 2,250 permanent jobs in the casino, hotel, restaurants and related facilities. The project will also generate significant local revenues from property, hotel and sale taxes, as well as State revenue.

The project is consistent with the Mid-Hudson Region Economic Development Council Strategic Plan, which calls for economic development associated with Stewart International Airport, and recommends capitalizing on the region's traditional strength in tourism. The creation of "destination hotels" is specifically cited as one of the strategies recommended in support of tourism in the region. The report continues, in reference to destination lodging: "Where appropriate, the viability of casino gambling should also be considered." (p. 41). The Orange County Comprehensive Plan, last updated in 2010, identifies the project site and the surrounding area as a "Priority Growth Area" for economic development based on its available utilities, highway access and public transportation.

The project is also consistent with the Town of New Windsor 2009 Comprehensive Plan Update, which calls for more intensive development surrounding Stewart International Airport in support of economic development and job creation. The area around the airport is identified as appropriate for hotels, conference centers and other related "destination uses that would benefit from the Airport and surrounding regional highway system, and uses that will serve and support the immediate region." (p. 20).



Greenetrack, Inc. at New Windsor

New Windsor, New York

USGS Location Map

LEGEND

Site Location

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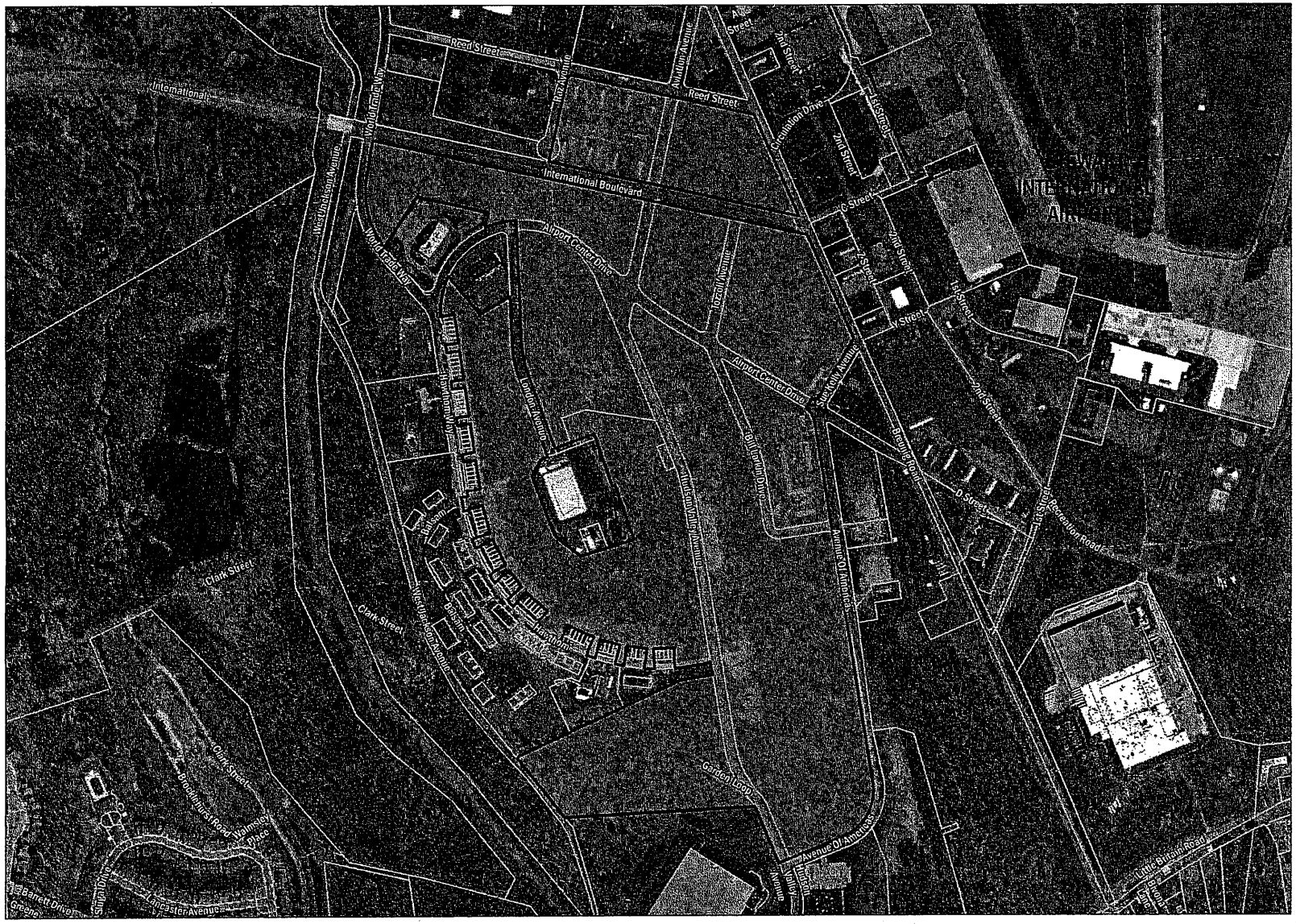

Greenetrack, Inc. at New Windsor

New Windsor, New York

Property To Be Leased

LEGEND

- Parcel Boundary
- Property To Be Leased

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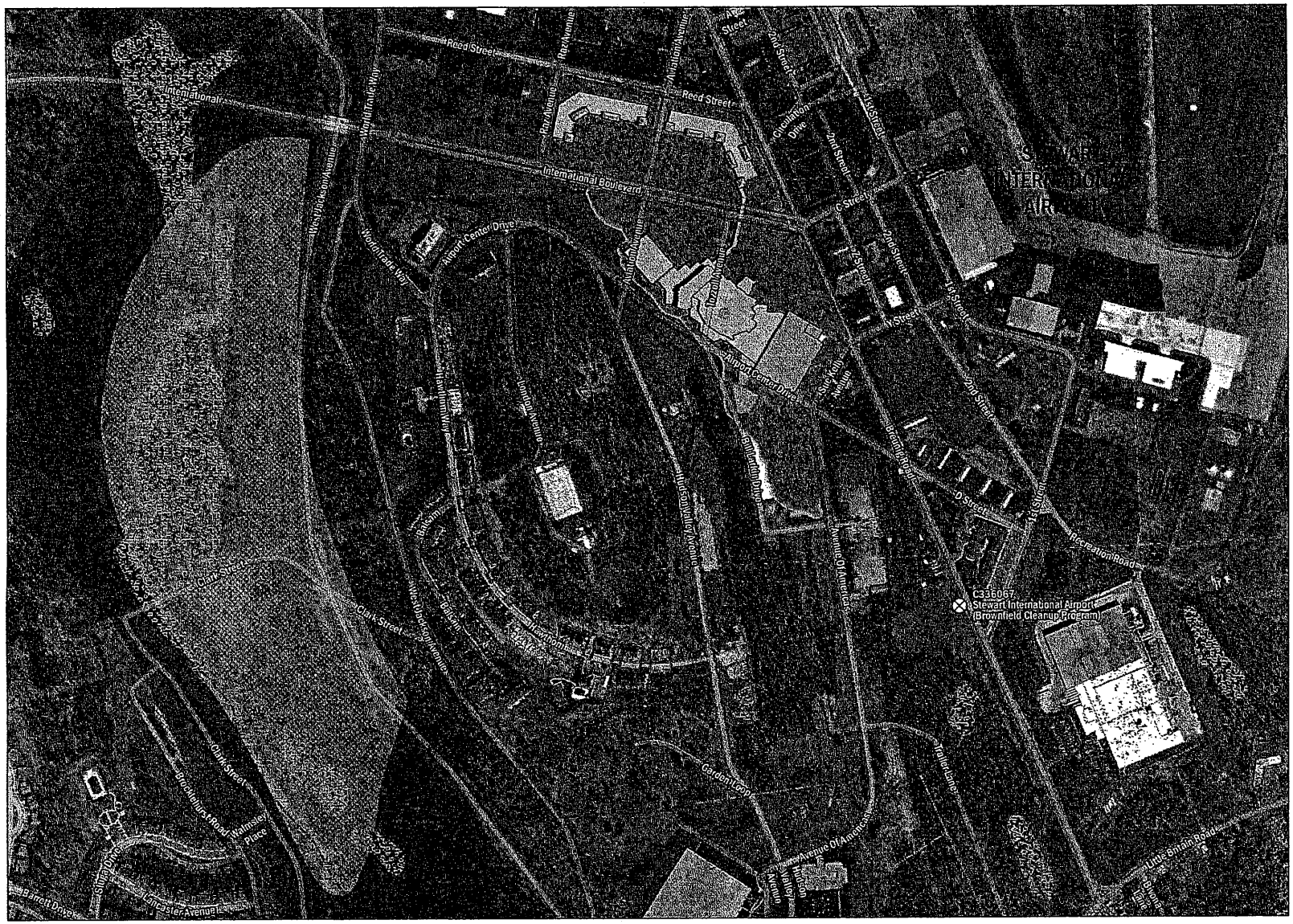


Greenetrack, Inc. at New Windsor

New Windsor, New York

Existing Conditions With Conceptual Plan

N
W E
S

LEGEND

- Site Location
- Roads
- NYS DEC Remediation Site
- Primary Aquifer

NYS DEC Stream Classification

- A Classified Stream
- C Classified Stream

FEMA Floodplains

- 100 Year Floodplain
- 500 Year Floodplain

Wetlands

- Federal Wetland
- State Wetland
- State Wetland Checkzone

Sand/Gravel Aquifer

- Stratified sand and gravel at land surface and below the water table
- Stratified sand and gravel below clay or silt and the water table

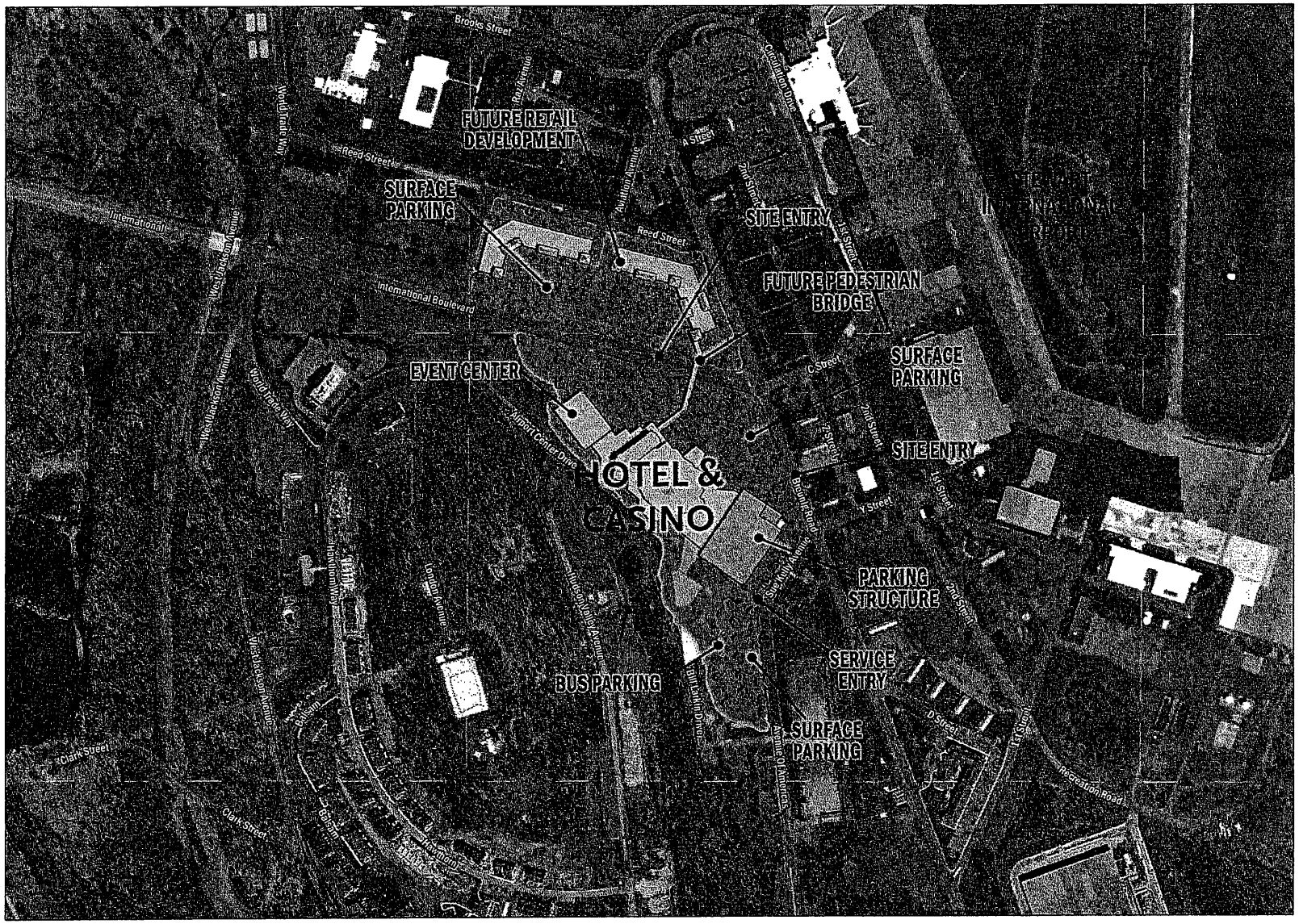
0 100 200 400 Feet

WATG

wendel

Site Photo: Google Maps Imagery Date: April 2011

Wendel PC, Architecture, Engineering, Consulting, Landscape Architecture PC, 248 Jackson St, 14904 Tel 716 [illegible] www.wendel.com
© Copyright Wendel PC 2011 Reproduction and distribution of this drawing is prohibited without the express written consent of Wendel PC.
Site Topo: [illegible] Orthophotography: [illegible] Site Plan: [illegible]
Environmental Consultant: U.S. Fish & Wildlife Service, Cortland Field Office
Planning: Tetra Tech Engineering & Management Inc., Bridge Street, [illegible] Hartford, [illegible] Amsterdam Ave, New York, NY 10024



Greenetrack, Inc. at New Windsor

New Windsor, New York

Conceptual Site Layout

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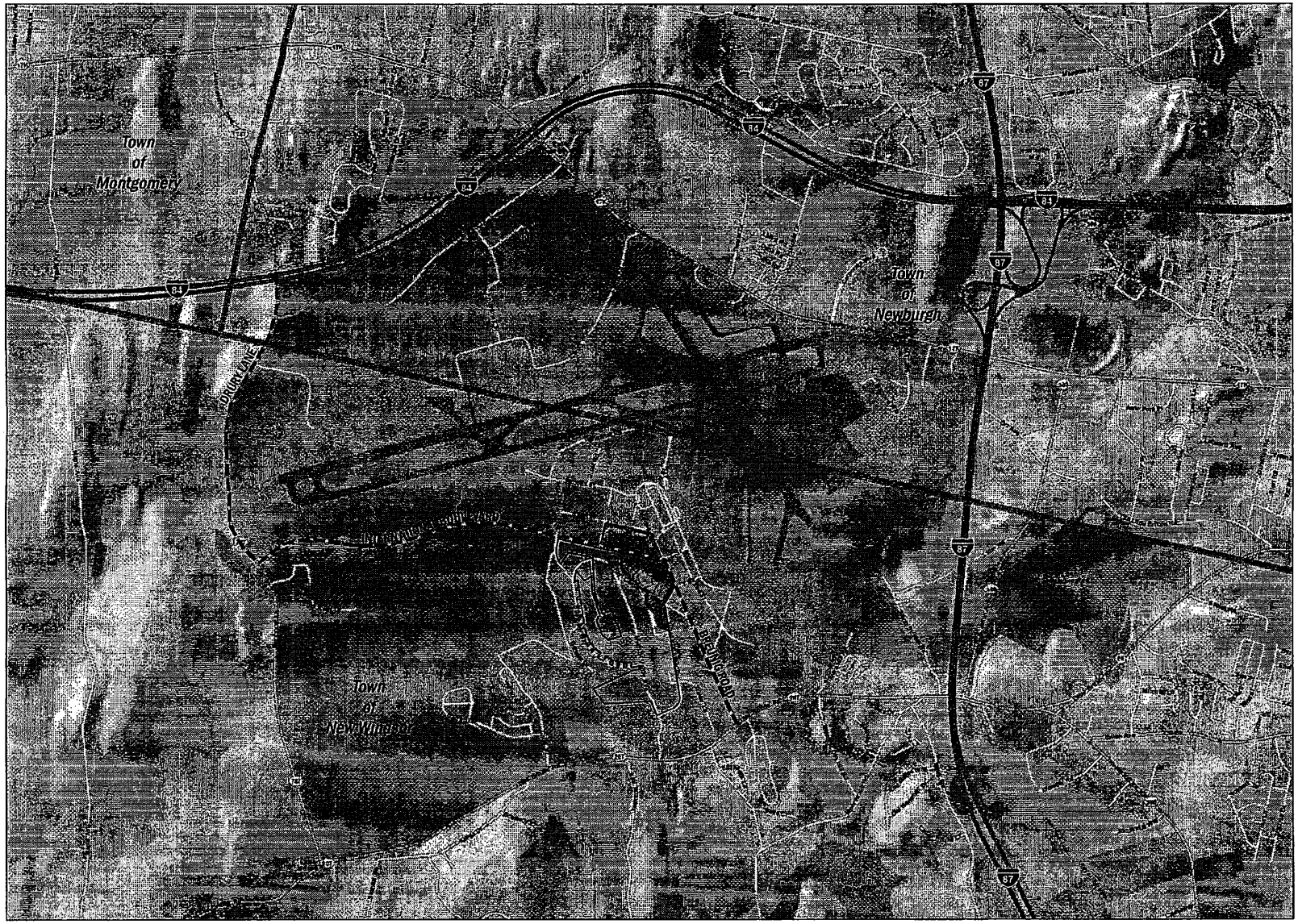

Greenetrack, Inc. at New Windsor

New Windsor, New York

Site Access

LEGEND

- Municipal Boundary
- Site Location

Site Access

- Primary Route
- Secondary Route

0 500 1,000 2,000 Feet

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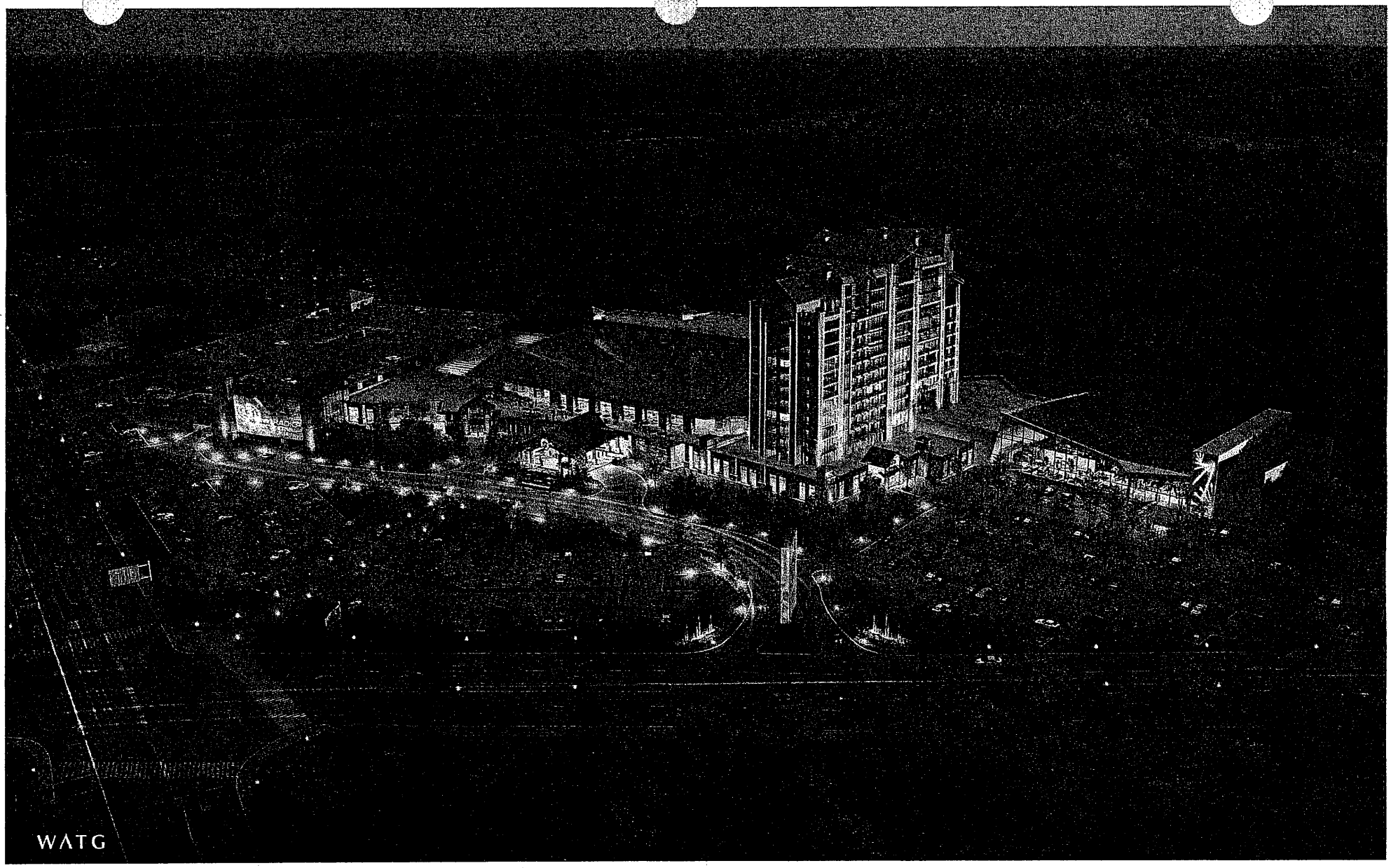

GREENETRACK, INC. AT NEW WINDSOR

BIRD'S EYE VIEW

02 APRIL 2014

wendel

WATG

GREENETRACK, INC. AT NEW WINDSOR

PORTE COCHERE VIEW

02 APRIL 2014

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Findings Statement

New York International Plaza

(Previously approved project – located at this site, 2003)

Town of New Windsor

555 Union Avenue
New Windsor, New York 12553
Telephone: (845) 563-4615
Fax: (845) 563-4693

OFFICE OF THE PLANNING BOARD

State Environmental Quality Review Act
Notice of Completion of Final EIS

Lead Agency: Town of New Windsor Planning Board Date: July 23, 2003

Address: 555 Union Avenue
New Windsor, New York 12553

This notice is issued and has been prepared in accordance with Article 8 of the New York State Environmental Conservation Law and 6 NYCRR Part 617, the implementing regulations pertaining thereto (collectively, "SEQRA").

A Final Environmental Impact Statement ("Final EIS") has been completed and accepted by the Town of New Windsor Planning Board, as lead agency, for the proposed action described below. A copy of the Final EIS is attached.

SEQRA Classification: Type I

Name of Action: New York International Plaza/STAS Redevelopment

Description of Action: Redevelopment of the former Stewart Army Subpost (STAS), a 263 +/- acre parcel in the Town of New Windsor. The STAS lands have been ground-leased by the Town of New Windsor for the purposes of economic development. The redevelopment plan contemplates redevelopment in multiple phases to establish a broad range of commercial, industrial, retail, institutional, residential and/or other uses pursuant to existing zoning requirements, including parking, utilities, street, and other improvements and facilities identified as necessary or appropriate as redevelopment proceeds. The action also involves the proposed subdivision approval of Parcel H (128 ±acres) into two lots with a portion of land to be used for the extension of Hudson Valley Avenue.

Location: Former Stewart Army Subpost property, generally bounded by Stewart International Airport to the north and east, Route 207 to the south, and Jackson Avenue to the East in the Town of New Windsor, New York in the Town of New Windsor, New York.

A Copy of the Final EIS and Additional Information may be obtained from:

Contact Person: Mark Edsall, P.E., P.P., Engineer for the Planning Board

Address: c/o Town Hall
555 Union Avenue
New Windsor, New York 12553

Telephone Number: (845) 563-4615

A Copy of this Notice and the Final EIS Sent to:
(One copy of the Final EIS to be sent to these locations)

* Commissioner, Department of Environmental Conservation, 625 Broadway, Albany, New York 12233-0001

* Appropriate Regional Office of the Department of Environmental Conservation

* Office of the Chief Executive Officer of the political subdivision in which the action will be principally located; George J. Meyers, Town Supervisor

* All other involved and interested agencies

New York State Agencies:
Department of Transportation, Poughkeepsie
Department of Environmental Conservation, Main Office
Department of Environmental Conservation, New Paltz
Parks, Recreation and Historic Preservation
Department of Economic Development

County of Orange Agencies:
Department of Health
Department of Planning

Town of New Windsor Agencies:
Town Board
Zoning Board of Appeals

* Persons requesting Final EIS (subject to copying fees)

RESOLUTION ACCEPTING AS COMPLETE THE FINAL ENVIRONMENTAL IMPACT STATEMENT

PREPARED BY THE TOWN OF NEW WINDSOR PLANNING BOARD, AS LEAD AGENCY, WITH RESPECT TO THE NEW YORK INTERNATIONAL PLAZA PROJECT

JULY 23, 2003

WHEREAS, First Columbia International Group, LLC. (the "Applicant") submitted an application to the Town of New Windsor Planning Board (the "Planning Board") requesting subdivision approval to allow the redevelopment of the former Stewart Army Subpost (STAS), a 263 +/- acre parcel, in the Town of New Windsor into the New York International Plaza; and

WHEREAS, the action involves the proposed subdivision approval of Parcel H (128 ±acres) into two lots with a portion of land to be used for the extension of Hudson Valley Avenue; and

WHEREAS, the STAS lands have been ground-leased by the Town of New Windsor for the purposes of economic development. The redevelopment plan contemplates redevelopment in multiple phases to establish a broad range of commercial, industrial, retail, institutional, residential and/or other uses pursuant to existing zoning requirements, including parking, utilities, street, and other improvements and facilities identified as necessary or appropriate as redevelopment proceeds; and

WHEREAS, the location of the project is the former Stewart Army Subpost property, generally bounded by Stewart International Airport to the north and east, Route 207 to the south, and Jackson Avenue to the East in the Town of New Windsor, New York; and

WHEREAS, pursuant to the New York State Environmental Quality Review Act Article 8 of the Environmental Conservation Law, and its implementing regulations (collectively, "SEQRA"), the procedures necessary to coordinate lead agency status have been undertaken and completed and the Planning Board has been duly designated as lead agency; and

WHEREAS, on November 18, 2002, the Planning Board determined that the project may have a significant effect on the environment and issued a positive declaration of significance; and

WHEREAS, a Draft Environmental Impact Statement ("DEIS") was submitted to the Planning Board which was, after careful review by the Planning Board and its consultants, determined on April 9, 2003 to be complete and adequate for public review; and

WHEREAS, on May 14, 2003, the Planning Board conducted a combined public hearing to consider the DEIS and subdivision application at which all members of the public were given an opportunity to submit oral and written comments on the project. The public hearing was closed at the same meeting; and

WHEREAS, the SEQRA public comment period closed on May 27, 2003, more than 43 days thereafter; and

WHEREAS, pursuant to SEQRA, a draft Final Environmental Impact Statement ("Draft FEIS") was prepared in connection with the project; and

WHEREAS, certain written comments were received by the Planning Board after the close of the public comment period, but were, nevertheless included and addressed in the FEIS to provide a full and comprehensive evaluation; and

WHEREAS, the Planning Board, the individual members, the Planning Board Engineer, the Town Engineer, special Planning Consultant to the Planning Board and Town Departments have evaluated the Draft FEIS for accuracy and completeness and suggested revisions to the document which have been incorporated into the Final Environmental Impact Statement (the "FEIS"); and

WHEREAS, the Planning Board does not consider the information and/or issues raised regarding the DEIS to be new or different from the information and analyses contained in the DEIS, however, to the extent that the information and/or issues may be considered as such, such matters do not result in the identification of new or different significant adverse environmental impacts warranting the need for a supplemental EIS; and

WHEREAS, certain information and analyses relating to issues examined in the DEIS were amplified and further discussed in the draft FEIS as a result of comments received from the public and other parties. This material is consistent with information regarding such issues contained in the DEIS. It amplifies and augments information previously considered by the Planning Board and contained in the DEIS and does not identify newly discovered information about significant adverse environmental effects which were not previously addressed. Therefore, the draft FEIS identifies and examines all relevant potential environmental impacts which have been identified; and

WHEREAS, the Planning Board and individual Planning Board members and its consultants have thoroughly examined, evaluated and considered the draft FEIS for the purpose of determining completeness, accuracy and substance of the comments and responses contained therein; and

WHEREAS, all procedures required by SEQRA and other applicable law which need to be completed through the adoption of this resolution have been completed; and

WHEREAS, the Planning Board has determined to accept the Draft FEIS as the FEIS.

NOW, THEREFORE, BE IT RESOLVED that the Planning Board hereby makes the following findings and determinations:

1. The FEIS, which incorporates by reference the DEIS, identifies, includes and responds to all substantive comments, both oral and written, which have been received, and is therefore accepted as complete, adequate and accurate as to form, substance and content.

2. The information and/or issues raised regarding the DEIS are not new or different from the information and analyses contained in the DEIS, however, to the extent that the information and/or issues may be considered as such, such matters do not result in the identification of new or different significant adverse environmental impacts warranting the need for a supplemental EIS and would not aid the Planning Board in analyzing the project and otherwise performing its obligations under SEQRA.

3. To provide comprehensive and thorough responses, the FEIS contains additional information and confirmatory analyses when appropriate to aid the Planning Board in its analytical and decision-making obligations under SEQRA. As more fully discussed in the FEIS, the new information and/or confirmatory analyses contained in the FEIS amplify and further examine issues examined in the DEIS as a result of comments received from the involved agencies and the public. The additional information and analyses are consistent with the examination of issues contained in the DEIS and do not result in the identification of any new or different significant adverse environmental effects. Therefore, a supplemental draft environmental impact statement is not warranted or required and would not aid the Planning Board in analyzing the project and otherwise performing its obligations under SEQRA.

4. The Planning Board hereby authorizes and directs the Secretary to file and distribute, as required by 6 NYCRR §617.12 , the Notice of Completion of FEIS attached hereto as Exhibit A and the FEIS.

5. This Resolution shall take effect immediately.

Town of New Windsor

555 Union Avenue
New Windsor, New York 12553
Telephone: (845) 563-4615
Fax: (845) 563-4693

OFFICE OF THE PLANNING BOARD

NEW YORK INTERNATIONAL PLAZA

RESOLUTION ISSUING A FINDINGS STATEMENT PURSUANT TO THE NEW YORK STATE ENVIRONMENTAL QUALITY REVIEW ACT ("SEQRA")

AUGUST 27, 2003

The TOWN OF NEW WINDSOR PLANNING BOARD, in the County of Orange, State of New York, met in a regular meeting session at Town Hall in the Town of New Windsor, located at 555 Union Avenue, New Windsor, New York on the 27th day of August, 2003, at 7:30 p.m.

James Petro, Chairman, called the meeting to order and the following were present:

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The following was moved, seconded and adopted:

WHEREAS, First Columbia International Group, LLC. (the "Applicant") submitted an application to the Town of New Windsor Planning Board seeking subdivision approval of Parcel "H". The request included subdividing the existing Parcel "H" (128+/- acres) into two lots with a portion of land to be used for the extension of Hudson Valley Avenue; and

WHEREAS, the Applicant has entered into a 99-year lease with the Town of New Windsor, as the exclusive developer after a competitive review process, for the express purpose of promoting, accommodating and enhancing economic development on the former Stewart Army Subpost property ("STAS") lands; and

WHEREAS, the 15-year redevelopment plan of the STAS lands contemplates the construction of approximately 2,000,000 square feet of modern facilities, replacing approximately 923,900 square feet of existing obsolete facilities and creating a premier corporate mixed-use development to be known as New York International Plaza ("NYIP"). The mix of uses include: high-tech offices; convention center; hotels; retail; restaurants; corporate residences; education facilities; and light manufacturing; and

WHEREAS, on May 31, 2002, the Planning Board, as lead agency, declared its intent to act as lead agency pursuant to the New York State Environmental Quality Review Act and the regulations promulgated thereunder at 6 NYCRR Part 617 ("SEQRA"), and all involved agencies have agreed to the Planning Board acting as lead agency; and

WHEREAS, on November 18, 2002, the Planning Board determined that the overall redevelopment plan may have a significant effect on the environment and issued a positive declaration of significance; and

WHEREAS, the Applicant voluntarily prepared a proposed outline for the draft environmental impact statement and submitted it to the Planning Board; and

WHEREAS, the Planning Board determined to provide the public an opportunity to commit on the scope of the draft EIS and established a draft scope and made it available for public comment; and

WHEREAS, the Planning Board considered all comments received on the draft scope, and incorporated those which it determined substantive and relevant; and

WHEREAS, a final scope was adopted by the Planning Board on or about February 26, 2003; and

WHEREAS, the Planning Board received draft DEIS documents prepared by the Applicant in December 2002 and later revised April 10, 2003; and

WHEREAS, the Planning Board, based upon its own independent judgment and consideration of the DEIS, the recommendation of the McGoey, Hauser and Edsall Consulting Engineers, PC, the Town Engineers and Planning Board Engineers, and the recommendation of Stuart Turner and Associates, the Planning Board's special consultant, found and determined that the DEIS was satisfactory with respect to its scope, content and adequacy for purposes of commencing public review and caused the DEIS, supporting documents, the Notice of Completion of the DEIS and the Notice of Joint Public Hearing to be filed, circulated, published and made available for copying in accordance with SEQRA and other applicable law; and

WHEREAS, pursuant to SEQRA and the Subdivision Regulations, a joint public hearing was conducted on May 14, 2003 at which all members of the public were given an opportunity to submit oral and written comments on the project and, thereafter, the public hearing was closed; and

WHEREAS, the Planning Board accepted the submission of additional written comments on the DEIS through May 27, 2003, which comments, together with the oral public hearing comments, were incorporated into the FEIS (as defined below); and

WHEREAS, detailed comments were received from the Town Engineer and Planning Board Engineer on the DEIS; and

WHEREAS, detailed comments were received from the special consultant to the Planning Board on the DEIS; and

WHEREAS, no involved agency provided oral or written comments; and

WHEREAS, pursuant to SEQRA the Planning Board caused a proposed Final Environmental Impact Statement with Appendices, which incorporated the DEIS (collectively, the "FEIS") to be prepared and each individual Planning Board member received and reviewed the proposed FEIS; and

WHEREAS, on July 23, 2003 the Planning Board adopted the proposed FEIS as the FEIS; and

WHEREAS, certain information and analyses relating to issues examined in the DEIS were amplified and further discussed in the FEIS as a result of comments received from the public and other parties, and

WHEREAS, the Planning Board determined, in connection with its acceptance of the FEIS, and after carefully considering and applying the criteria required pursuant to SEQRA, that the FEIS identified and examined all relevant potential environmental impacts which have been identified and that no supplemental environmental impact statement was required or warranted; and

WHEREAS, the Planning Board determined that the FEIS identified and examined all relevant potential environmental impacts which are reasonably anticipated as a result of the project; and

WHEREAS, the Planning Board thoroughly and objectively considered the substantive and relevant information provided in the proposed FEIS and sought the advice of the Town and Planning Board Engineers and the special consultant; and

WHEREAS, more than 10 days have passed since the acceptance and filing of the FEIS; and

WHEREAS, all procedures required by SEQRA, the Subdivision Regulations and other applicable law have been completed.

NOW, THEREFORE, BE IT RESOLVED THAT at each stage of the SEQRA proceedings, the Planning Board has encouraged comment from all of those interested and involved, and has provided sufficient time for preparation and consideration of and comment on the DEIS and the FEIS, as required by SEQRA in order to permit such comment and to develop a full and complete understanding of the project. As a result of its independent examination, and careful review, the Planning Board finds, on balance, after due consideration of all relevant documentation and comments, it has more than adequate, and accurate information with which to evaluate all of the relevant benefits and potential impacts of the overall redevelopment plan.

NOW, THEREFORE, BE IT FURTHER RESOLVED THAT:

I. SEQRA FINDINGS

1. The Planning Board has considered the relevant environmental impacts, facts and conclusions disclosed in the FEIS.

2. The Planning Board certifies that the requirements of 6 NYCRR Part 617 have been met.

3. The Planning Board has weighed and balanced relevant environmental impacts with social, economic and other considerations.

4. The Planning Board affirms that consistent with social, economic and other essential considerations from among the reasonable alternatives available, the action is one that avoids or minimizes adverse environmental impacts to the maximum extent practicable, and that adverse environmental impacts will be avoided or minimized to the maximum extent practicable by incorporating as conditions to the decision those mitigative measures that have been identified as practicable. See Section VI - Mitigation Measures of this Findings Statement.

II. SUPPORTING FACTS/CONCLUSIONS

The following facts and conclusions are derived from the FEIS, other documents, reports, submittals and testimony, and other relevant information, including the personal knowledge and familiarity of the Planning Board members with the overall redevelopment plan, its location and its surrounding areas, comprising the record of these deliberations. They are set forth herein as the basis of the Planning Board's decision and document the environmental, social, economic and other factors and standards used by the Planning Board in making this decision.

A. BACKGROUND/SCOPE OF REVIEW

1. At the height of its use, existing army subpost facilities included approximately 158 structures totaling approximately 923,900 square feet of gross floor area, approximately 5.8 miles of asphalt paved roadways with its own storm sewer system, water treatment and distribution system, wastewater treatment plant and sanitary sewer system, low pressure natural gas distribution system and overhead electric, telecommunication and cable TV wires.

2. In the 1970's the USMA took control of the STAS lands and operated the facility for housing and support facilities for West Point. In the 1990's USMA decided to consolidate their facilities to West Point. Disposal of the STAS lands became a main focus. Through special legislation passed by the United States Congress, the STAS lands were transferred to the Town of New Windsor to redevelop the lands for economic purposes.

3. Pursuant to such legislation, the Town of New Windsor leased the STAS lands to the Applicant to promote, accommodate and enhance economic development. The redevelopment plan will spur both local and regional economies, re-establish a major employment center and generate employment opportunities and increased revenues throughout the region.

4. The Applicant has prepared a plan for redevelopment of STAS representing its current vision for redevelopment. The redevelopment plan generally utilizes the existing roadways, underground gas, water, sanitary and storm sewers and contemplates renovating approximately ten existing buildings.

5. The overall redevelopment plan will be a dynamic mix of approximately 2,000,000 square feet of modern facilities replacing the existing 923,900 square feet of existing, obsolete buildings. Over the estimated 15 year build-out, the mix of uses are contemplated to include: high tech offices, convention center, hotels, retail restaurants, corporate residences, education facilities, light manufacturing and service station.

6. Implementation of the redevelopment plan will be on a site-by-site or project-by-project basis, over the expected 15-year build-out. Any required permits and approvals for individual projects will be obtained as and when required. The Planning Board will review the individual plans taking into account the determinations of the SEQRA findings.

7. The FEIS was prepared to identify an overall mix of development within the confines of the STAS lands, as permitted by and in reliance upon the Town's Zoning Law and as obligated by the ground lease. The Planning Board recognizes the Applicant's need to be flexible in locating and mixing uses so that this redevelopment plan can proceed in light of then-existing market forces.

8. The FEIS evaluated environmental impacts based on a ±2.5 million square foot mixed use build-out, a size 25% larger than actually currently contemplated. This adjustment factor provides a cushion in the analysis of impacts to account for the fact that certain mixes may result in greater (or lesser) individual environmental impacts than other mixes at the same size. The adjustment factor allows flexibility in the mix of uses that enables the redevelopment to react to current and future market demands.

9. That need has been reasonably balanced against the Planning Board's need to have a level of detail sufficient to permit it to identify, evaluate, and mitigate likely environmental impacts.

10. The overall redevelopment plan establishes specific site development envelopes for certain sizes and types of uses, in conformity with the Town's Zoning Law. The site development envelopes were located to establish the Applicant's current vision for the appropriate long-term redevelopment of the STAS lands. Because the size and type of use have been identified in each development envelope, the environmental impacts associated with such development can be and were generally identified and evaluated in the DEIS, such as cultural resources, vegetation and wildlife, water resources, demographic characteristics, soils, geology, and topography. Identifying size, site location and type of use permits identification and consideration of projected impacts such as water usage, sewer usage, stormwater management, traffic, wetlands, air quality, noise, infrastructure needs, community services, and economic impacts. Establishment of design guidelines and application of land use, and zoning requirements permit the Planning Board to monitor visual impacts, land use, and zoning.

11. Because the Planning Board must approve site plans for each individual project and future subdivisions for the individual projects, the Planning Board will have the opportunity to examine an individual project, its layout, and the extent to which the resulting impacts are already covered by this Findings Statement. If the Planning Board determines that a further (or supplemental) EIS is warranted because an actual individual project differs significantly from that considered in this review, the Planning Board will require such supplemental EIS at that time.

12. The Planning Board has established performance criteria derived from the information contained in the FEIS to assure that the impacts remain within the scope of impacts analyzed. In furtherance thereof, the Planning Board has created a New York International Plaza Individual Project Checklist ("Checklist"), a draft of which is attached to this Findings Statement as Schedule A (final versions of the checklist may be updated as projects are reviewed in the future). The Checklist will enable the Planning Board to: 1) track future redevelopment projects; 2) identify when certain development thresholds have been reached, necessitating construction of the identified traffic and other improvements, and 3) ensure parameters identified in the FEIS are met. As a result, to the extent actual development within the mix of uses changes, the Planning Board has established a mechanism to determine that the overall environmental impacts remain within the range examined in the FEIS or to undertake any necessary further SEQRA review.

13. In accordance with the requirements of SEQRA, the FEIS provides an exhaustive examination of relevant potential environmental impacts, including potential secondary and cumulative impacts, which may result from the redevelopment plan.

14. The record upon which this Findings Statement is based is the result of approximately 16 months of studies and analyses by the Planning Board.

15. Professional studies were completed by qualified experts identifying and analyzing traffic impacts, wetland impacts, stormwater impacts, cultural resources impacts, sanitary sewer impacts, aesthetic impacts and others. The FEIS contains hundreds of pages of material.

16. The FEIS contains reasonably detailed information concerning the redevelopment plan, a reasonable description of the methodology used to undertake the environmental impact review, and detailed plans and expert reports which specifically describe and analyze in greater detail a variety of potential environmental areas.

17. The Town and Planning Board Engineers are licensed professional engineers and are highly respected in the Town and Region. The Engineers have been actively involved in the environmental impact review and analysis, which has been completed for this project. The input of the Planning Board Engineer has been sought and received by the members of the Planning Board at each stage of the Planning Board's review and consideration of the project.

18. The Planning Board also retained the services of a special consultant, a recognized expert in environmental planning, to assist the Planning Board in its effort to fully evaluate all potential environmental impacts of the overall redevelopment plan. The special consultant has provided detailed comments to the Planning Board regarding the scoping document, the DEIS and FEIS to assist the Planning Board in its obligation to take a hard look at the potential impacts of the overall redevelopment project.

19. No involved agency provided written comments to the Planning Board regarding the DEIS and only one person spoke at the public hearing and submitted comments to the Planning Board. That person generally supported the overall redevelopment plan concept.

20. The Planning Board is also aware of other separate projects, including roadway improvement projects that have been completed. Those projects are in the same general area within the Town, have been planned separately, have their own unique funding sources, are not interdependent and are not part of a larger integrated plan. They include the Interstate 84/Drury Lane connection to Stewart Airport, Tenant Housing Redevelopment and an expansion to the airport. Nevertheless, they were all considered in the FEIS.

21. The traffic review and analyses assumed completion of the Interstate 84/Drury Lane connection to Stewart Airport and construction of Terrace Housing. The traffic volumes and other traffic-related impacts studied for those projects were incorporated as appropriate into the background/no build conditions for the redevelopment plan. Therefore, the FEIS identified and evaluated traffic and related impacts of the redevelopment plan cumulatively to those arising from the Interstate 84/Drury Lane connection and Terrace Housing.

22. The above scope of review has provided the Planning Board with a comprehensive basis to evaluate reasonably foreseeable environmental impacts associated with the overall redevelopment plan. The scope of review identifies and analyzes potential environmental impacts of development, which has not even been definitively proposed, allowing the Planning Board to consider those potential impacts in reaching its decision with respect to the overall redevelopment plan.

B. PROJECT IMPACTS

1. LAND USE AND ZONING

a. Generally, the STAS lands are situated along the northern side of Route 207 (Little Britain Road) and the western side of Breunig Road, with the Stewart International Airport bordering the site to the east and to the north.

b. The STAS lands are located in an Airport-1 (AP-1) zoning district. The proposed mix of uses are all permitted uses within this zoning classification.

c. The currently contemplated and the examined alternative mix of uses is based upon, and was prepared in furtherance of the Applicant's obligations under the ground lease and upon the existing zoning for the project site.

d. The overall redevelopment plan is consistent with the Town's long-range plans. The Planning Board supports the proposed mix of uses for the overall redevelopment as an appropriate use for these lands. The Planning Board recognizes that the Applicant has already made a substantial financial investment including construction toward reaching the goal of the overall redevelopment plan. The Applicant has relied on the mix of existing permitted uses in establishing the overall redevelopment plan. Such proposed and permitted uses are consistent with the Town's long range plans, a goal the Planning Board seeks to implement. Unless otherwise agreed to by the Applicant, the Planning Board will support the continuation of the currently permitted uses and will not act contrary to such continuation.

e. The existing, obsolete buildings within the site will be redeveloped or demolished consistent with the requirements of the Zoning Law.

f. In connection with future site plan applications for individual redevelopment projects, future subdivision applications may be made either concurrently or individually.

g. No adverse impacts have been identified regarding land use and zoning.

2. PROJECT BENEFITS

a. Since the Town is the owner of the land, no property tax revenue is currently derived therefrom. Consistent with the Town's ground lease with the Applicant, the Town's goal (and the purpose of the Federal legislation) of economic development for the STAS Lands will be realized.

b. Redevelopment of the STAS lands will spur both local and regional economies, re-establish a major employment center and generate employment opportunities and increased revenues throughout the region.

c. Redevelopment will create approximately 5,300 jobs, generate over $500 million in new construction and equipment purchases, create over $72 million in property taxes [PILOT payments] and produce over $79 million in sales tax revenues.

d. Any private funding of certain public improvements (*i.e.* traffic, water, and sewer) is a significant benefit for the Town and districts in the form of current and future cost savings.

e. The Washingtonville School District will experience a significant net annual increase in school tax revenues.

f. Based on the analyses which have been completed regarding projected tax revenues, the overall redevelopment plan will result in a net increase in tax revenues to the Town.

g. The overall redevelopment plan will also likely result in other beneficial impacts to the Town such as multiplier effects experienced through job creation.

h. The substantial increase in municipal revenues derived from the redevelopment will far outweigh any increased costs to the Town to provide services for NYIP, even if the full build-out is not ultimately achieved.

3. WATER AND SEWER RESOURCES

- **Groundwater**

a. The overall redevelopment plan is not anticipated to have any significant impact on groundwater, significantly sized water bodies, floodplains, navigable waterways or coastal zones located on or adjacent to the Site. No primary, principal or sole source aquifers exist under the STAS lands.

- **Stormwater**

a. The STAS lands are located within the Moodna Creek sub-basin of the Lower Hudson River Basin, which is located within the North Atlantic Slope Basin. Stormwater runoff from the eastern half of STAS lands typically follows a path from Silver Stream to Moodna Creek before entering the Hudson River. Alternatively, the western half of STAS lands drains into Beaver Dam Lake.

b. Implementation of the redevelopment plan will increase the impervious area with the construction of paved parking areas and new buildings. Stormwater management measures will be required to address surface water flow. The proposed stormwater management plan model controls the increase in stormwater run-off from future redevelopment projects without adversely affecting down gradient conditions.

c. The Storm Water Management Plan (SWMP) addresses stormwater management for the overall redevelopment plan. It specifically addresses anticipated maximum runoff based on the full build out for specific storm intervals. It conceptually identifies and establishes those stormwater management features and practices that will achieve required stormwater quality and quantity goals.

d. The existing stormwater management system was modeled in accordance with Town of New Windsor requirements and NYSDEC regulations.

e. Four regional detention facilities have been designed to accommodate full build-out. They will be constructed in stages to accommodate per project flows. The individual project design will permit, to the extent necessary, future expansion of the detention facilities by the creation of additional "cells". In other words, the detention facilities will be expanded by adding onto the existing facility.

f. In addition to the regional detention facilities, local on-site facilities (temporary and/ or permanent) within an individual project may be utilized to accommodate runoff and quality. Any local on-site facilities will be designed to achieve the same quantity and quality control goals as the regional system.

g. As initial building sites are developed, temporary facilities may be constructed within or within close proximity of the proposed development.

h. In connection with individual project layouts, water quantity and quality requirements of the NYSDEC's Phase II Stormwater Regulations must be addressed as may be required for such projects.

i. Storage of chemicals and petroleum will be done in conformance with State and Federal regulations so as to minimize potential impacts to stormwater facilities.

j. No significant adverse impacts were identified as a result of the stormwater management plan.

- **Water Distribution System**

a. The STAS lands and facilities are currently serviced by the Town's Riley Road Water Filtration Plant.

b. Implementation of the redevelopment plan will generate a maximum daily demand for water of approximately 333,296 gpd. Previously, the STAS facilities generated an average daily demand of approximately 455,400 gpd as a military facility.

c. The current water distribution system provides adequate service with daily usage of 455,400 gpd. The existing system should adequately distribute potable water for the redevelopment projects. Distribution pipe sizes may be increased or other measures implemented to improve fire flow conditions in connection with individual project developments, as appropriate. Any such improvements may be performed by the water district and all related costs of such improvements will be assessed against benefited properties.

d. The overall redevelopment plan will be sequenced or scheduled, such that available capacity of the Riley Road Plant will not be exceeded until such time that the plant capacity has been increased or such additional development is otherwise approved by the Town.

e. No significant adverse impacts have been identified regarding water distribution services as a result of the overall redevelopment plan.

- **Sewer Resources**

a. The current sewer collection system facilities adequately provides service.

b. Implementation of the redevelopment plan will generate a maximum daily wastewater flow of approximately 333,296 gpd. The former uses generated an average daily demand of approximately 455,400 gpd as a military facility.

c. Caesars Lane treatment facility has a current permitted capacity of 5.0 MGD, with future plans to expand to 10.2 MGD. It has excess capacity of 250,000 GPD.

d. The Applicant also acquired 200,000 GPD capacity from the Moodna Basin Development (MBD). As stated above, the estimated demand at full build out of the overall redevelopment project will be approximately 333,296 GPD, which will provide sufficient capacity for the overall redevelopment plan. To the extent required at that time, available additional capacity may be obtained from the MBD. Construction will be sequenced or scheduled such that available capacity at that time will not be exceeded or development has been otherwise approved by the Town.

e. The system has experienced Inflow and Infiltration (I&I) problems over the years due to a function of the of the age of the existing sewer system, construction materials used and construction practices at that time.

f. Any I & I problems will be addressed by replacing and/or repairing the existing sanitary sewer facilities (piping and manholes) or implementing other measures within the STAS lands, as deemed acceptable by the Town, as individual projects are constructed. Any such measures will benefit the sewer system by removing or repairing the lines which allow unwanted inflow into the system. Such work may be performed by the sewer district, in which case all related costs of such improvements will be assessed against benefited properties.

g. No significant adverse impacts have been identified regarding sewer resources as a result of the overall redevelopment plan.

4. UTILITIES

a. Implementation of the redevelopment plan will eventually replace the overhead utility lines with electric/ telecommunication duct bank system.

b. Central Hudson Electric and Gas (Central Hudson) provides electric and gas service to the Site. Central Hudson has indicated that sufficient capacity to service the individual projects from the existing facilities is available.

c. No significant adverse impacts are anticipated for electric and gas.

d. Telecommunication services are provided by Verizon and Frontier Communications. Service to the Site is available and no significant adverse impacts are anticipated for telecommunications.

e. No significant adverse impacts have been identified regarding utilities as a result of the overall redevelopment plan.

5. WETLANDS

a. There are no New York State regulated wetlands on the STAS lands.

b. There are 5 discrete small federally protected wetlands identified totaling ±0.6 acres. They are shown in Figure 2.8.1-1 in the DEIS.

c. Future development proposals will be designed to avoid or minimize any impact to these areas. Given the shape, size and relationship of the federally regulated wetlands to the contemplated overall redevelopment, it is likely that disturbance will be avoided. If this is not possible, the Applicant will be required to obtain any necessary permits from the USACOE. Conformance to such permitting requirements will avoid or minimize any environmental impacts likely to occur as a result of such disturbance.

6. GEOLOGY

a. According to mapping provided in the USDA Soil Conservation Survey for Orange County, New York (1981), six general soil types exist across the site.

b. The majority of the soils are classified as Mardin soils - MdB, MdC and MdD. The MdB and MdC soils are the dominant soil types and are generally located across the central portion of the site. The Madalin soils (Ma) are located across the southeast corner of the site. The Bath-Nassau soils (BnB) cover a very small portion near the southeast corner of the site near Breunig Road. The Erie soils (ESB) cover a small portion of the site to the south, near NYS Route 207. The Swartswood and Mardin (SXC) soils are located in a small pocket on the southwest portion of the site. The Udorthents soils (UH) are located in the northern portion of the site near the existing Wastewater Treatment Facility.

c. Topography will not be significantly altered by the individual projects by taking a balanced cut-fill approach during redevelopment. Potential impacts during construction relate to the potential for erosion, generation of dust, removal of rock and possible occurrence of seasonal high ground water table.

d. Specific erosion control plans will be prepared as required prior to construction to control runoff and dust generation for each individual site during construction. The plans will be designed to retain soil and remove it from stormwater reaching water bodies or adjoining properties. Construction of each site may include a number of temporary erosion control measures, as required by the NYSDEC and/or sound construction practices. Following construction, the erosion control measures will be managed and maintained consistent with the recommendations in the *New York Guidelines for Urban Erosion and Sediment Control.*

e. Blasting may be used to excavate bedrock. However, the depth to bedrock is greater than four feet. Therefore, it is unlikely that bedrock will be encountered.

f. Potential impacts associated with any blasting which may occur are addressed in the DEIS by establishment of detailed guidelines and mitigation measures to address such impacts. Adherence to these guidelines and measures will assure that there will be no significant adverse environmental impacts (such as noise, vibration, damage to nearby buildings and structures or debris) resulting from any blasting which may be required.

g. Blasting will not be used to demolish aboveground buildings or structures.

h. No significant adverse impacts have been identified regarding geology as a result of the overall redevelopment plan that have not been adequately mitigated to the maximum extent practicable.

7. TRANSPORTATION

a. A traffic impact analysis was conducted by the BL Companies to evaluate the potential traffic impacts of the overall redevelopment project on the area highway system.

b. Such analysis considered proposed roadway improvements (including ones under construction), as well as roadways within the NYIP. All such proposed improvements were assumed to be in place for the full build out of the overall redevelopment project. Such planned improvements to be constructed were evaluated in the following traffic reports: 1) New York State Thruway Authority Contract D211816, Reconstruction of C Street, 2) Stewart Airport Access Improvement Project and 3) Stewart International Airport, Airport Master Plan Update.

c. The improvements include the relocation of Sue Kelly Avenue, extension of Hudson Valley Avenue, removal of the eastern section of Airport Center Drive and the removal of the northern section of Hudson Valley Avenue.

d. The traffic impact study completed roadway capacity analyses to determine roadway improvements, if any, required to maintain acceptable traffic flow and safety.

e. Primary access to NYIP will be from I-84 via the Stewart Airport Access Improvement Project (Drury Lane Connector) with secondary access to be from NYS Route 207 via Breunig Road and Hudson Valley Avenue. Each access point will be signalized.

f. Capacity and level of service analysis were performed for the following intersections:

Signalized

- Route 207 at Drury Lane
- Route 207 at Hudson Valley Avenue
- Route 207 at Breunig Road
- Route 207 at Route 300 (Westerly Junction)
- International Boulevard at World Trade Way
- International Boulevard at Aviation Avenue
- International Boulevard at Breunig Road

Unsignalized

- Breunig Road at Sue Kelly
- World Trade Way at Airport Center Drive
- Airport Center Drive at Hudson Valley Avenue/Aviation Avenue
- Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue

g. The results of the analyses indicates that at certain stages of the overall redevelopment build-out, roadway improvements are required to maintain acceptable traffic flow and traffic safety with improvements to the following intersections:

h. Transportation improvements to accommodate the traffic generated by the overall redevelopment include the following:

- *Route 207 at Route 300 (westerly junction)* – Increase traffic signal cycle lengths for both the morning and afternoon peak hours and modify signal timings. It is anticipated that these improvements will be implemented immediately as the redevelopment initially proceeds.

- *International Boulevard/Connector Road at World Trade Way* – Widen along the southerly side of the east-west Connector Road to provide an exclusive eastbound right turn lane. Re-stripe the northbound Airport Center Drive approach to provide an exclusive left turn lane and a shared left/through/right turn lane. Widen the northerly side of the Connector Road to provide the proper acceptance width for the dual left turn movement. The improvements required for the dual left-turn-only lane are anticipated to be needed after approximately 70% (1,735,000 SF) of the redevelopment is complete.

- *International Boulevard at Aviation Avenue (formerly 4th Street)* – Re-stripe the Aviation Avenue northbound approach to provide a left turn lane and a shared left/through/right turn lane. Widen the northerly side of the International Boulevard west of Aviation Avenue for the dual left turn movement. The improvements required for the dual left-turn-only lane are anticipated to be needed after approximately 80% (approximately 2,012,000 SF) of the redevelopment is complete.

- *Airport Center Drive (formerly D Street) at Aviation Avenue (formerly 4th Street)/Hudson Valley Avenue (formerly Aviation Avenue* – Reconstruct the northeasterly corner of the intersection to provide a channelized right turn lane. Modify the traffic control by removing the existing stop signs from the Hudson Valley Avenue and Aviation Avenue approaches and installing stop signs on the World Trade Way approaches. The improvements required for the channelized right-turn-only lane are anticipated to be needed after approximately 90% (2,264,00 SF) of the redevelopment is complete.

- *Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue* – Modify the traffic control to provide stop signs on both the Bill Larkin Drive and Tozzoli Avenue approaches. These improvements are anticipated to be required upon completion of the Stewart Airport and I-84 Connection.

i. The traffic study concluded that completion of these improvements will enable each intersections to function efficiently and safely with the additional vehicular traffic resulting from the full build out with resulting acceptable LOS and volume to capacity ratios.

j. Taking into account the identified improvements, and their timing, the potential adverse traffic impacts are mitigated to the maximum extent practicable.

k. In summary, taking into account the identified mitigation measures, traffic flow conditions at each of the above-referenced intersections will be maintained or improved for the overall redevelopment plan.

8. AESTHETIC RESOURCES

a. As noted above, the STAS land contains 158 buildings/structures that are vacant and/or obsolete, or both. Such property is currently a vacant, former United States Army subpost.

b. The visual character of the site will be altered from the existing military style buildings of the former STAS to a master-planned, mixed-use commercial facility.

c. The proposed buildings along with the elimination of overhead wires and proposed landscaping will provide a positive impact on the visual landscape of the STAS lands.

d. Development guidelines were identified in the DEIS.

e. The development guidelines include:

- curb cuts/driveway access
- parking lots/standards
- site lighting
- landscaping
- fences/walls
- monument signage
- flagpoles
- utilities
- street lighting
- building facade
- building signage

f. The development guidelines are intended to establish and maintain the character of the redevelopment as a state-of-the-art commercial campus.

g. The implementation of the development guidelines and application of land use and zoning requirements permit the Planning Board to monitor visual impacts, land use and zoning.

h. The Planning Board determines that the development guidelines ensure that the impacts remain within the scope of impacts analyzed.

i. No significant adverse visual impacts associated with the redevelopment plan have been identified.

9. COMMUNITY SERVICES

- **Fire, Police and Emergency Services**

a. In order to assess the impacts (or compatibility) of the proposed redevelopment with the community services, the Applicant contacted the providers of those services and requested their input. Those providers responded. Those providers are in the best position to assess the impacts, if any, within the scope of services they provide.

b. The providers (police, fire and emergency) have responded that no significant adverse impacts with respect to such services are anticipated from the overall redevelopment plan.

c. Based on evaluations performed and responses received from emergency services representatives, implementation of the redevelopment plan will not have an adverse impact on emergency services.

- **Recreation and Education**

a. Although the overall redevelopment plan contemplates a minor corporate housing component, it is not expected to generate a significant amount of school-aged children that might impact the school district. Educational facilities will significantly benefit from receipt of school taxes from previously tax-exempt property.

10. AIR QUALITY AND NOISE

a. Implementation of the overall redevelopment plan will not produce any measurable changes in local or regional climate, or result in a significant adverse air impact whether through construction, operation, or related transportation.

b. Odors anticipated with overall redevelopment plan are consistent with those that currently exist both on-site and in the surrounding area.

c. During construction, noise generated by construction equipment can reach high levels. However, it is likely that any on-site construction noise will be short duration and generally overridden by the daily operations of the adjacent airport.

d. There are no potential adverse impacts on air quality as a result of the overall redevelopment plan.

11. CULTURAL RESOURCES

a. The DEIS provided an extensive evaluation of cultural resources.

b. The only resource identified which was screened as potentially significant was the Sayre-McGregor House. It was evaluated in detail in a report dated January 1998 entitled *Cultural Resources Input to the Environmental Baseline Study - Stewart Army Subpost* (prepared by The Greeley-Polhemus Group, Inc. and John Milner Associates, Inc.) in connection with the transfer by the Federal government of the STAS lands.

c. The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) by letter dated February 27, 1998, approved the final cultural resources report conclusion that there would be no potential adverse impacts on cultural resources, including the Sayre-McGregor House.

d. A detailed evaluation of the Sayre-McGregor House was completed applying criteria B and C for potential NHRP eligibility. The report included assessment of other similar architecture in the Town of New Windsor and neighboring communities, the extent to which the original structure has been modified, and the quality of the original construction. It concluded that the Sayre-McGregor House was not eligible for inclusion on the National Register of Historic Places because it does not possess the characteristics required for NRHP listing.

e. On May 22, 2003, OPRHP submitted an evaluation form suggesting that the Sayre-McGregor House may meet eligibility criteria for inclusion in the National Register of Historic Places.

f. Based on the more detailed and extensive analysis completed by a professional consultant the Planning Board believes that the Sayre-McGregor house is not eligible for inclusion on the National Register of Historic Places.

g. Even if OPRHP adheres to its current position (May 22, 2003), the Applicant has represented that it will redesign the stormwater detention facilities so that the house can be preserved, thereby avoiding any potential significant adverse environmental impacts to it.

h. In furtherance thereof, the Applicant has shown that sufficient space and capacity exist to modify the facilities as shown without affecting other elements of the redevelopment plan. Taking into account the modifications, stormwater management facilities continue to be sufficient to accommodate expected stormwater volumes and quality in such facilities.

i. Implementation of the redevelopment plan will not have an adverse impact on cultural resources, taking into account the potential modifications to the stormwater facilities.

12. VEGETATION AND WILDLIFE

a. This site has already been developed (a former self-contained military base) and much of the natural vegetation has already been cleared. The remaining vegetative resources on-site are common to the area. The loss or conversion of these types of vegetation is considered a minor impact.

b. Clearing at any individual site will be undertaken in connection with individual projects, taking into account actual construction needs, physical site characteristics, zoning requirements, and other relevant factors.

c. Major plant communities on the site, as defined by Reschke in "Ecological Communities of New York State," include mowed lawn, successional upland old-field, successional upland shrub, and successional hardwood forest. In addition to these upland plant communities, there are also wetland plant communities.

d. There are no state or federally listed threatened or endangered species of vegetation presently occupy the site, nor is critical habitat present for any animal species.

e. A detailed evaluation of a threatened species, the Upland Sandpiper, was performed by Ecological Solutions, LLC to determine whether there was any evidence of the existence of the Upland Sandpiper, whether suitable Upland Sandpiper is present on the site and if habitat exists, to assess the potential impacts of the redevelopment on the Upland Sandpiper ("Upland Sandpiper Habitat Assessment Study").

f. The Upland Sandpiper Habitat Assessment Study yielded no evidence of the existence of the Upland Sandpiper and no evidence of nests on the site. Therefore the proposed overall redevelopment plan will not result in any loss of habitat and have no adverse impacts on vegetation and wildlife, including the Upland Sandpiper.

g. Construction and operation of the overall redevelopment plan will not have a significant adverse impact to fish and wildlife. No unique habitats or rare, threatened or endangered species have been identified at this Site. There are no anticipated significant adverse impacts on vegetation and wildlife, including but not limited to the Upland Sandpiper, as a result of the overall redevelopment plan.

13. SECONDARY AND CUMULATIVE IMPACTS

a. Section 4.0 of the DEIS evaluates the potential secondary and cumulative (growth inducing) impacts of the overall redevelopment plan.

b. The Planning Board has carefully considered the secondary and cumulative impacts of the overall redevelopment plan such as construction employment opportunities and non-construction employment. Town and County residents may fill these job opportunities. If the overall redevelopment plan causes an increase in population, it is expected that such increase will be in areas that are properly zoned, possess adequate infrastructure capacity and is not an adverse impact.

c. A potential increase in population growth in the Town is not anticipated to be significant or concentrated, given that the region is already developed/populated. It is expected that any increase in population will be consistent with local land use and is not an adverse impact.

d. The overall redevelopment plan is not opening up new lands for development in the Town or surrounding areas. The overall redevelopment plan is not increasing or extending the reach of utilities and other public services beyond the site. It is redeveloping a previously developed site, and in doing so upgrading the uses therein, and using the land more efficiently.

e. Potential ancillary new business growth is possible, but it is not anticipated to constitute an adverse impact.

f. All induced growth is anticipated to be consistent with applicable local zoning and community's comprehensive planning efforts, and will be subject to any required environmental reviews in accordance with SEQRA. Thus, overall redevelopment project induced growth is not anticipated to have any significant adverse impact.

V. ALTERNATIVES

a. The FEIS contains a thorough and meaningful analysis of possible reasonable alternatives to the overall redevelopment plan, taking into consideration the objectives and capabilities of the Applicant.

b. Identified reasonable alternatives have been examined at a level of detail sufficient to allow a comparative assessment of their impacts.

c. The alternatives considered demonstrate the flexible nature of the redevelopment plan while achieving the goals set forth by the transfer of property. Analysis of various size redevelopment plans using the same uses studied in this DEIS, but varying the composite of uses demonstrates that uses which create more demand on specific resources (i.e. hotel demand on water is greater than office demand on water or traffic related to retail is greater than traffic related to corporate housing) will identify the maximum demand possible. Using the identified maximum demand values in comparison to the studied values highlights the ability of the redevelopment plan to be flexible and reactive to market demand within the range of impacts being considered.

d. Several redevelopment concepts were considered. The concepts were developed in consideration of marketability, environmental impact and mitigation thresholds. The analysis was sufficient to allow the evaluation of the impacts and highlight the possibilities of varying size redevelopment with varying concentration of uses. The alternatives developed and analyzed assume that the developed area of the STAS lands remains constant and that increased building square footage and increased parking is a function of additional building stories and integration of structured parking.

e. The redevelopment alternatives include: No Action; 2.5 million s.f. of development using four redevelopment land-use scenarios; and 1.5 million s.f. of development using three redevelopment land-use scenarios.

f. The no action alternative would eliminate the potential for adverse environmental impacts. However, it would eliminate the economic and other benefits for the Town. Moreover, the no action alternative is contrary to obligations set forth in the ground lease and would not meet the Town's goal of economic development.

g. The 2.5 million square foot alternative assumed a mix of varying height buildings. The four redevelopment scenarios were analyzed to establish a range of potential impacts from a redevelopment plan of this size. Transportation, water supply and treatment and wastewater collection and treatment were identified as potential impacts. Based on this alternative, the existing water and wastewater facilities can accommodate a redevelopment plan of this size. Additional mitigation measures relative to transportation may be required, however, it is anticipated that these measures would not be cost prohibitive in nature.

h. The 1.5 million square foot alternative assumed that the redevelopment would consist of lower story type structures. Three redevelopment scenarios were analyzed to determine the range of potential impacts. Transportation, water supply and treatment and wastewater collection and treatment were identified as potential impacts. Although a redevelopment of this size may be accommodated by the existing facilities and meet the Presidential goal of the land transfer, a redevelopment plan of this size would only be contemplated if market demand remains weak over an extended period of time.

i. The alternatives considered demonstrate that the redevelopment plan can be flexible while achieving the goals set forth in the ground lease.

VI. MITIGATIVE MEASURES

In order to minimize, to the extent practicable, potential adverse environmental effects identified herein, the following mitigation measures, or other measures which would provide the same or substantively similar mitigative effects, are hereby established and are to be implemented in connection with individual redevelopment projects:

1. Phase II Stormwater Runoff Discharges from Construction Activities permit from NYSDEC will be obtained as applicable. Temporary erosion control measures, as required by the NYSDEC and/ or sound construction practices, that may be implemented include protecting the inlets to and diverting runoff to temporary sediment basins and temporary sediment traps prior to discharge, installation of sediment basins and traps at the beginning of the construction process, and installation of silt fence and hay bale barriers at the toe of all embankments along long slopes to minimize channeling and inlet protection to all existing and proposed drainage structures

2. During construction, contractors will be required to implement dust control measures for each individual site and will include, as appropriate, the following measures:

   - Placement of any removed topsoil into a topsoil storage area and seeded with quick cover vegetation to prevent erosion.
   - Watering all exposed soil and rapidly stabilizing the re-graded areas with topsoil, loam and/or seeding.
   - Rinsing and/or wetting of the roadways with water as needed.
   - Maintenance of a maximum on-site speed limit of 15 mph to minimize pulverization and lifting of surface soil in the air-current wake of heavy equipment.

3. Existing buildings and structures will be investigated for the presence of asbestos in connection with demolition and/or renovation activities. To the extent asbestos is identified, such asbestos will be managed in accordance with applicable state and/or federal requirements.

4. The following measures are to be implemented in connection with site clearing activities:
   - Areas to be relandscaped after construction disturbance will be soil scarified and aerated prior to hydro seeding to manage the effects of soil compaction and to facilitate seed germination.
   - Physical barriers, such as snow fencing will be erected along the tree's drip line near construction activities.
   - Trunk and root systems of trees are to remain at individual sites.
   - Landscape plans will, wherever practicable, reflect species that are compatible with native vegetation found on the site.

5. If regulated wetland disturbance is proposed that requires notification to the ACOE, any required ACOE permitting and NYSDEC certification must be obtained.

6. Contractors will be required, in performing construction work, to comply with applicable Town noise requirements.

7. Existing overhead utility lines will be relocated as development progresses into a below ground manhole conduit system, as necessary.

8. Streetlights and street trees will be installed along dedicated town roads.

9. The Applicant shall require that individual project developments comply, as

appropriate, with design guidelines, described in Section 1.5 of the DEIS.

10. Water Supply and Treatment - Fire flow pressure enhancing devices or system improvements must be installed, as appropriate. Enhancements may be in the form of individual building booster pumps, other improvements to the distribution system, or otherwise, as determined by the Applicant. Distribution pipe sizes may be increased or other measures implemented to improve fire flow conditions. Any such improvements may be performed by the water district and all related costs of such improvements will be assessed against benefited properties.

11. Wastewater Collection and Treatment - To the extent necessary any existing I & I problems may be improved by repairing or replacing the existing sanitary sewer facilities (piping and manholes) or other measures within the STAS lands. Field investigation and monitoring must be performed, as necessary, to identify portions of the facilities which require any such measures. Any such work may be performed by the sewer district, in which case all related costs of such improvements will be assessed against benefited properties.

12. Transportation improvements to accommodate the projected traffic generated by the overall redevelopment include the following:

- *Route 207 at Route 300 (westerly junction)* – Increase traffic signal cycle lengths for both the morning and afternoon peak hours and modify signal timings. It is anticipated that these improvements will be implemented immediately as the redevelopment initially proceeds.

- *International Boulevard/Connector Road at World Trade Way* – Widen along the southerly side of the east-west Connector Road to provide an exclusive eastbound right turn lane. Re-stripe the northbound Airport Center Drive approach to provide an exclusive left turn lane and a shared left/through/right turn lane. Widen the northerly side of the Connector Road to provide the proper acceptance width for the dual left turn movement. The improvements required for the dual left-turn-only lane are anticipated to be needed after approximately 70% (1,735,000 SF) of the redevelopment is complete.

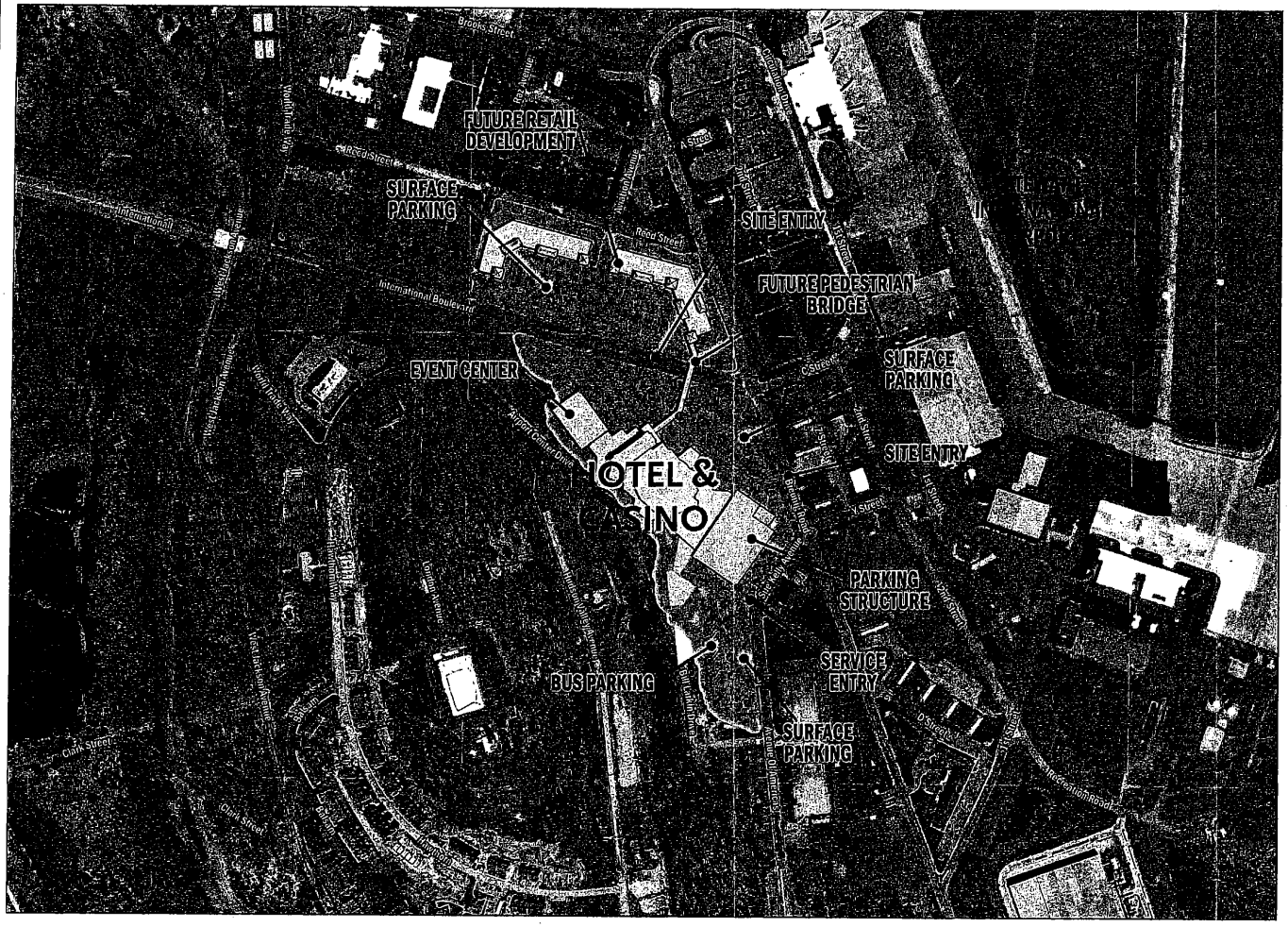
- *International Boulevard at Aviation Avenue (formerly 4th Street)* – Re-stripe the Aviation Avenue northbound approach to provide a left turn lane and a shared left/through/right turn lane. Widen the northerly side of the International Boulevard west of Aviation Avenue for the dual left turn movement. The improvements required for the dual left-turn-only lane are anticipated to be needed after approximately 80% (approximately 2,012,000 SF) of the redevelopment is complete.

- *Airport Center Drive (formerly D Street) at Aviation Avenue (formerly 4th Street)/Hudson Valley Avenue (formerly Aviation Avenue* – Reconstruct the northeasterly corner of the intersection to provide a canalized right turn lane. Modify the traffic control by removing the existing stop signs from the Hudson Valley Avenue and Aviation Avenue approaches and installing stop signs on the World Trade Way approaches. The improvements required for the channelized right-turn-only lane are anticipated to be needed after approximately 90% (2,264,000 SF) of the redevelopment is complete.

- *Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue* – Modify the traffic control to provide stop signs on both the Bill Larkin Drive and Tozzoli Avenue approaches. These improvements are anticipated to be required upon completion of the Stewart Airport and I-84 Connection.

13. All blasting operations, if any, will adhere to New York State regulations governing the use of explosives (see 12 NYCRR 39 and Industrial Code Rule 53). Additionally, the detailed procedures identified in Section 3.3.2 of the DEIS will be followed, to the extent practicable.

14. Applicants for site plan approval and/or subdivision approval for individual projects must complete and submit, with their application, a "New York International Plaza Individual Project Checklist" in the form attached hereto.



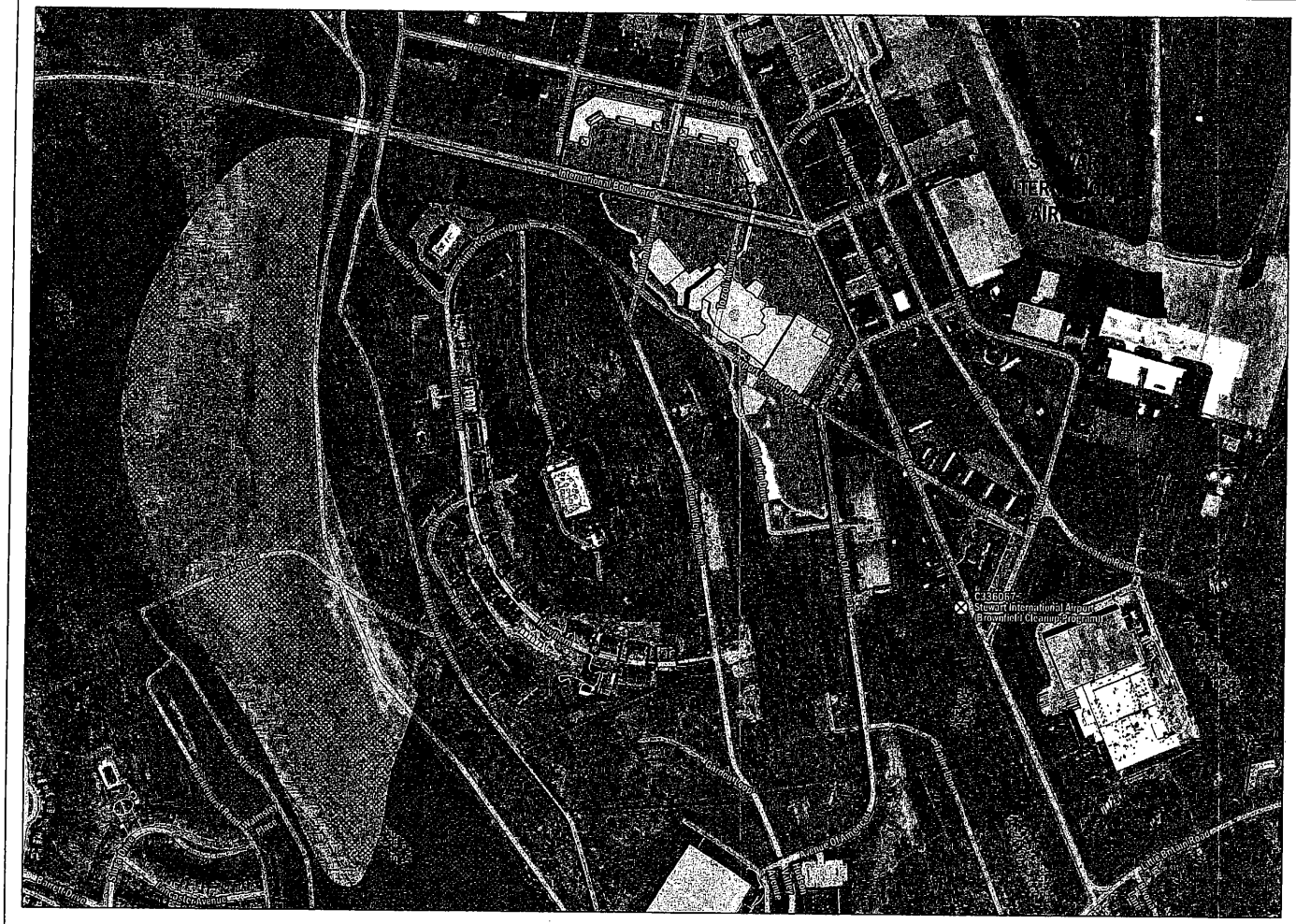
Greenetrack, Inc. at New Windsor

New Windsor, New York

Conceptual Site Layout

WATG

wendel



Greenetrack, Inc. at New Windsor

New Windsor, New York

Existing Conditions With Conceptual Plan

LEGEND

- Site Location
- Roads
- NYS DEC Remediation Site
- Primary Aquifer

NYS DEC Stream Classification

- A Classified Stream
- C Classified Stream

FEMA Floodplains

- 100 Year Floodplain
- 500 Year Floodplain

Wetlands

- Federal Wetland
- State Wetland
- State Wetland Checkzone

Sand/Gravel Aquifer

- Stratified sand and gravel at land surface and below the water table
- Stratified sand and gravel below clay or silt and the water table

0 100 200 400 Feet

WATG

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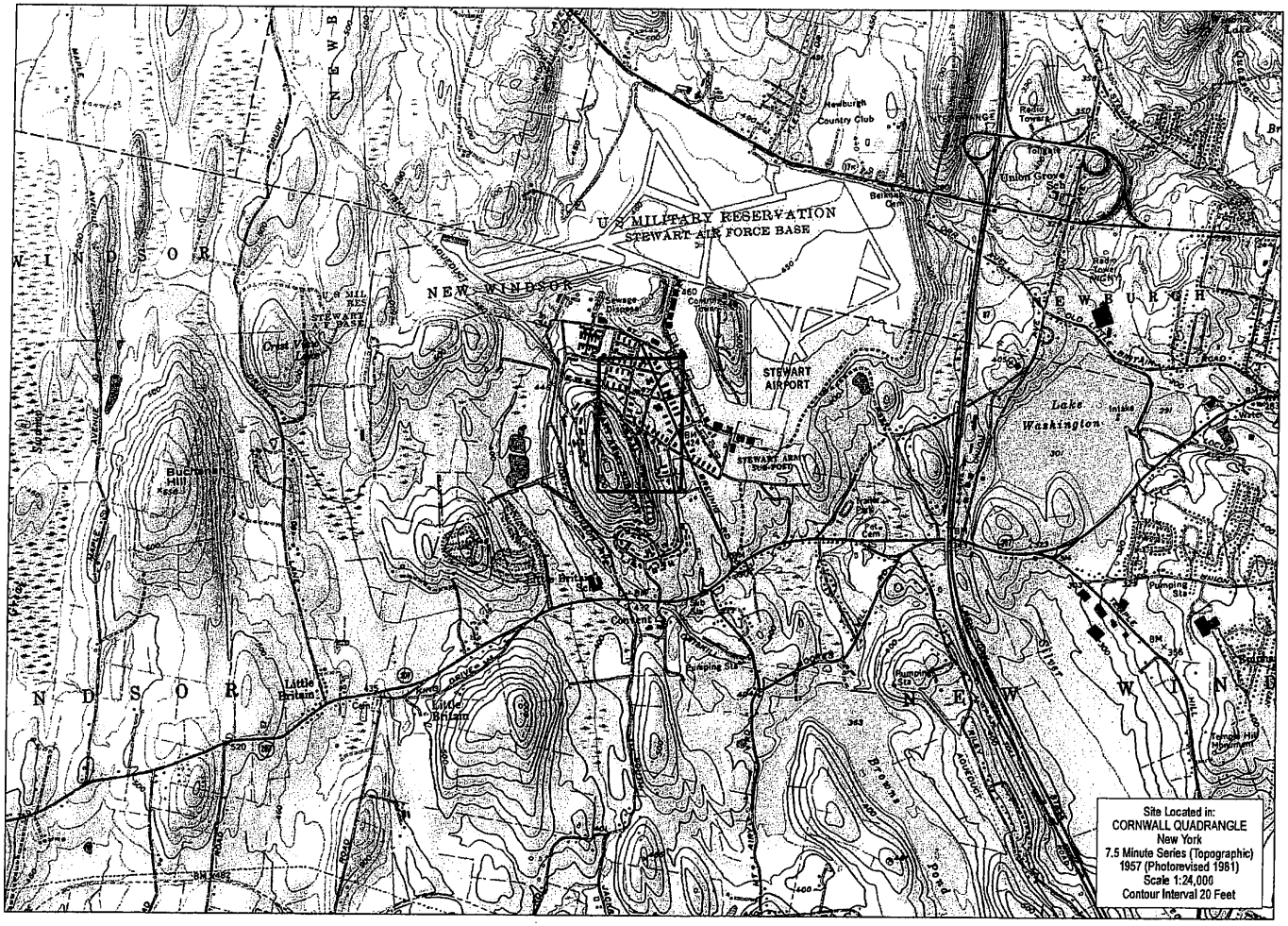

Greenetrack, Inc. at New Windsor

New Windsor, New York

USGS Location Map

LEGEND

Site Location

0 500 1,000 2,000 Feet

WATG

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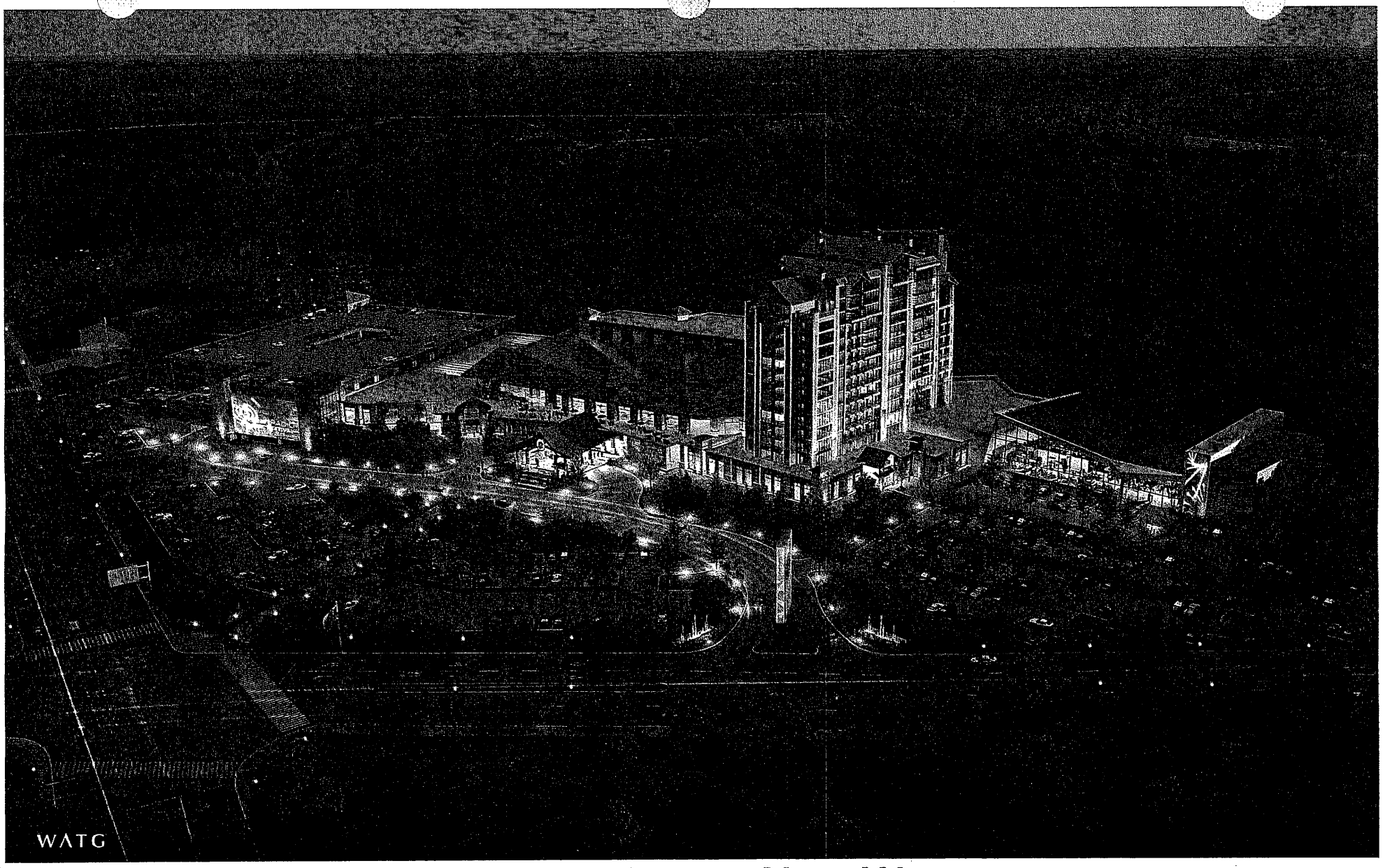

GREENETRACK, INC. AT NEW WINDSOR

BIRD'S EYE VIEW

02 APRIL 2014

wendel

WATG

GREENETRACK, INC. AT NEW WINDSOR

PORTE COCHERE VIEW

02 APRIL 2014

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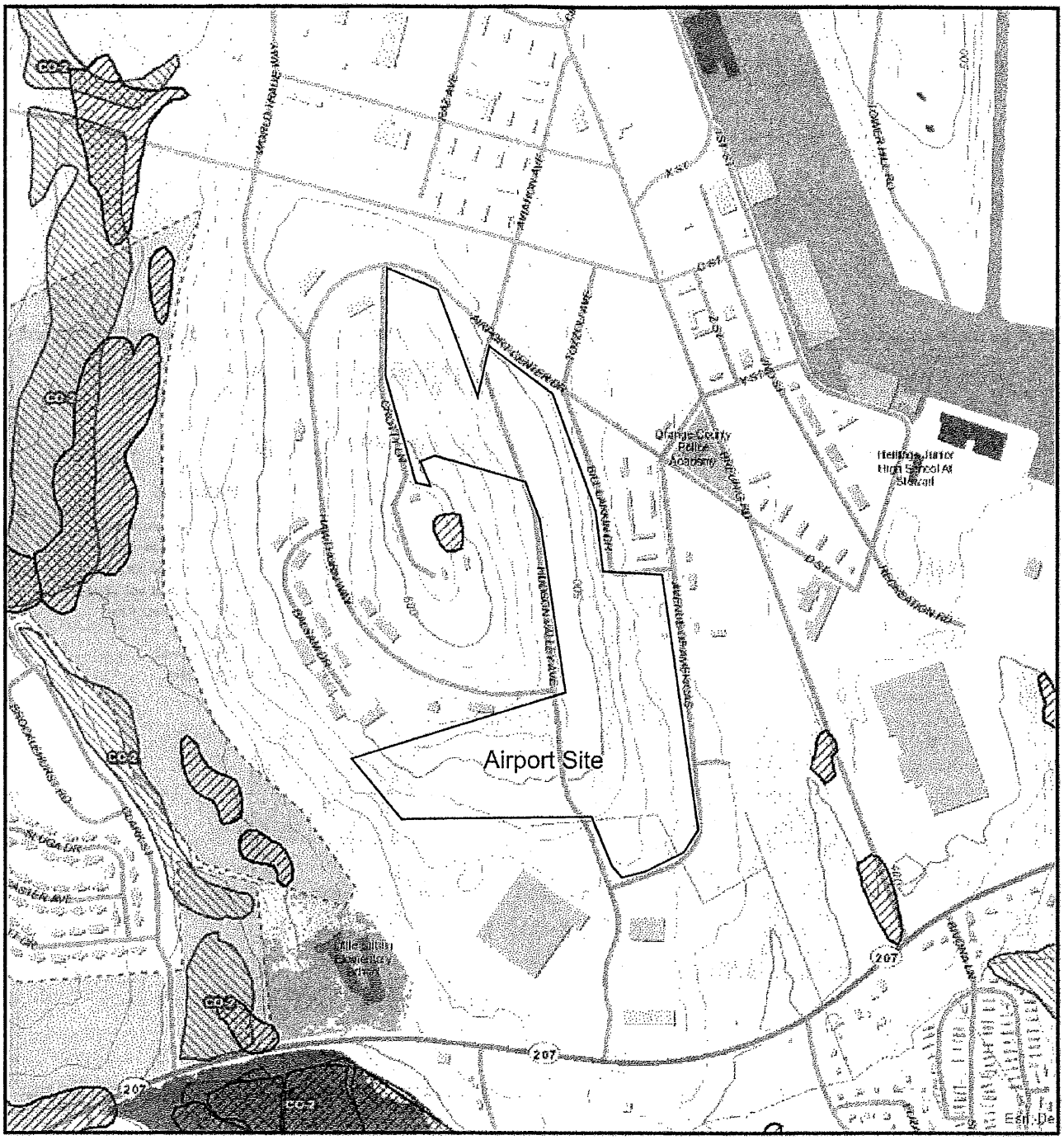


The Subtitle

Airport Site OC Map

Orange County G.I.S. Division 22 Wells Farm Rd Goshen, New York 10924 Phone: 845.615.3790

DISCLAIMER This map is a product of Orange County Information Technology GIS Division. The data depicted here have been developed with extensive cooperation from other County departments as well as other Federal, State and Local government agencies. Orange County make no representations as to the accuracy of the information in the mapping data, but rather, provide said information as is. Orange County expressly disclaim responsibility for damages or liability that may arise from the use of this map

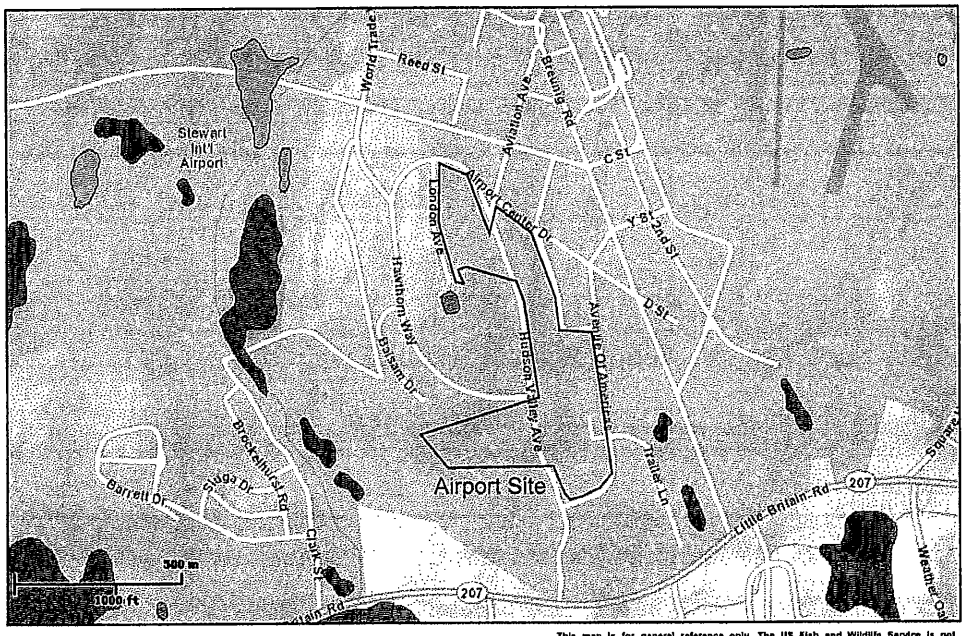
Printed: Feb 20, 2014

U.S. Fish and Wildlife Service

National Wetlands Inventory

Airport Site Federal Wetlands Map

Feb 19, 2014



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

EMPIREGEO SERVICES INC
a subsidiary of SJB Services, Inc.

SUBSURFACE EXPLORATION PLAN

PROPOSED SITE DEVELOPMENT PROJECT
INTERNATIONAL BOULEVARD
NEW WINDSOR
ORANGE COUNTY, NEW YORK

SCALE: 1" ~ 200'	PROJ NO.: BE-14-047
DATE: 04/15/14	FIGURE NO: 5
DR BY: WMA	CHKD BY: JJD

LEGEND:

B-1 APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.

B-7 APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING COMPLETED WITH GROUNDWATER OBSERVATION WELL.

BM-1 BENCHMARK USED BY SJB SERVICES, INC. TO DETERMINE RELATIVE GROUND SURFACE ELEVATIONS AT TEST BORING LOCATIONS. BOLT ON BOTTOM FLANGE OF FIRE HYDRANT. ASSUMED ARBITRARY ELEVATION DATUM = 100.00 FEET.

NOTE:

FIGURE DEVELOPED FROM AERIAL PROVIDED BY WENDEL COMPANIES

200 0 200
SCALE FEET

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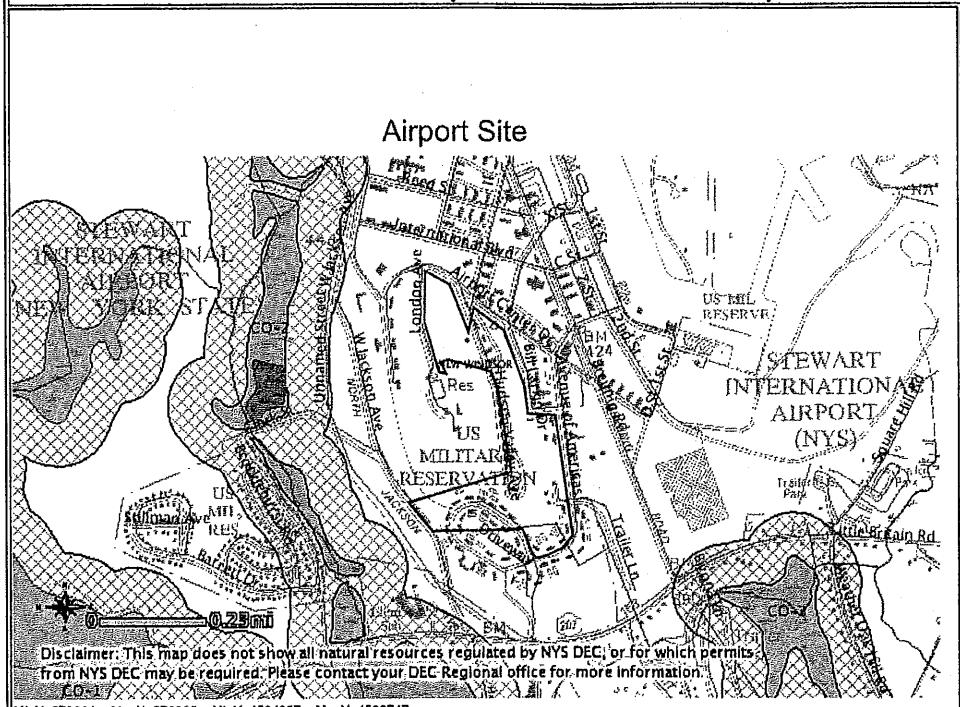
Please set your printer orientation to "Landscape".

Airport Site NYSDEC Wetlands Map



MinX: 573091, MaxX: 576360, MinY: 4594327, MaxY: 4592747

Visible Layers

- Classified Streams
- Classified Ponds
- State-Regulated Freshwater Wetlands
- Wetland Checkzone
- State-Regulated Freshwater Wetlands
- Rare Plants and Rare Animals
- Interstate Highways
- Adirondack Park Boundary
- Counties

Disclaimer:This map was prepared by the New York State Department of Environmental Conservation using the most current data available. It is deemed accurate but is not guaranteed. NYS DEC is not responsible for any inaccuracies in the data and does not necessarily endorse any interpretations or products derived from the data.

[print page] [close window]

The Coordinates of the point you clicked on are:

NYTM	E : 574662		Longitude/Latitude	W : 74.105
	N : 4593561			N : 41.490

Airport Site

Rare Plants and Rare Animals

This location is in the vicinity of one or more :
Rare Animals and/or Rare Plants

USGS Quadrangle

USGS Quadrangle Name
CORNWALL

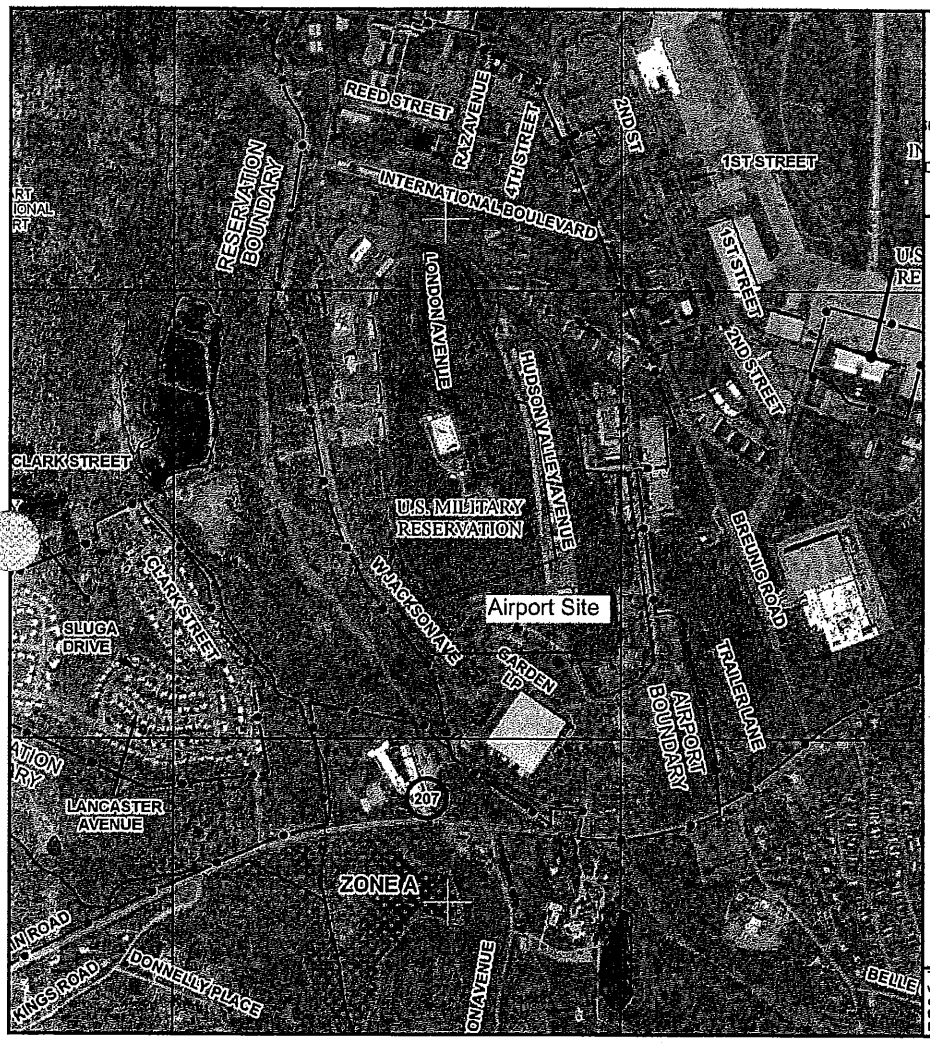
If your project or action is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the action may be harmful to the species or its habitat.

If your project or action is within or near an area with rare plants and/or significant natural communities, the environmental impacts may need to be addressed.

The presence of a unique geological feature or landform near a project, unto itself, does not trigger a requirement for a NYS DEC permit. Readers are advised, however, that there is the chance that a unique feature may also show in another data layer (ie. a wetland) and thus be subject to permit jurisdiction.

Please refer to the "Need a Permit?" tab for permit information or other authorizations regarding these natural resources.

Disclaimer: If you are considering a project or action in, or near, a wetland or a stream, a NYS DEC permit may be required. The Environmental Resources Mapper does not show all natural resources which are regulated by NYS DEC, and for which permits from NYS DEC are required. For example, Regulated Tidal Wetlands, and Wild, Scenic, and Recreational Rivers, are currently not included on the maps.



MAP SCALE 1" = 1000'

400 0 1000 2000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0330E

FIRM

FLOOD INSURANCE RATE MAP

for ORANGE COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
BLOOMING GROVE, TOWN OF	360608
CORNWALL, TOWN OF	360611
NEW WINDSOR, TOWN OF	360628
NEWBURGH, TOWN OF	360627

PANEL 330 OF 630
MAP SUFFIX: E
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

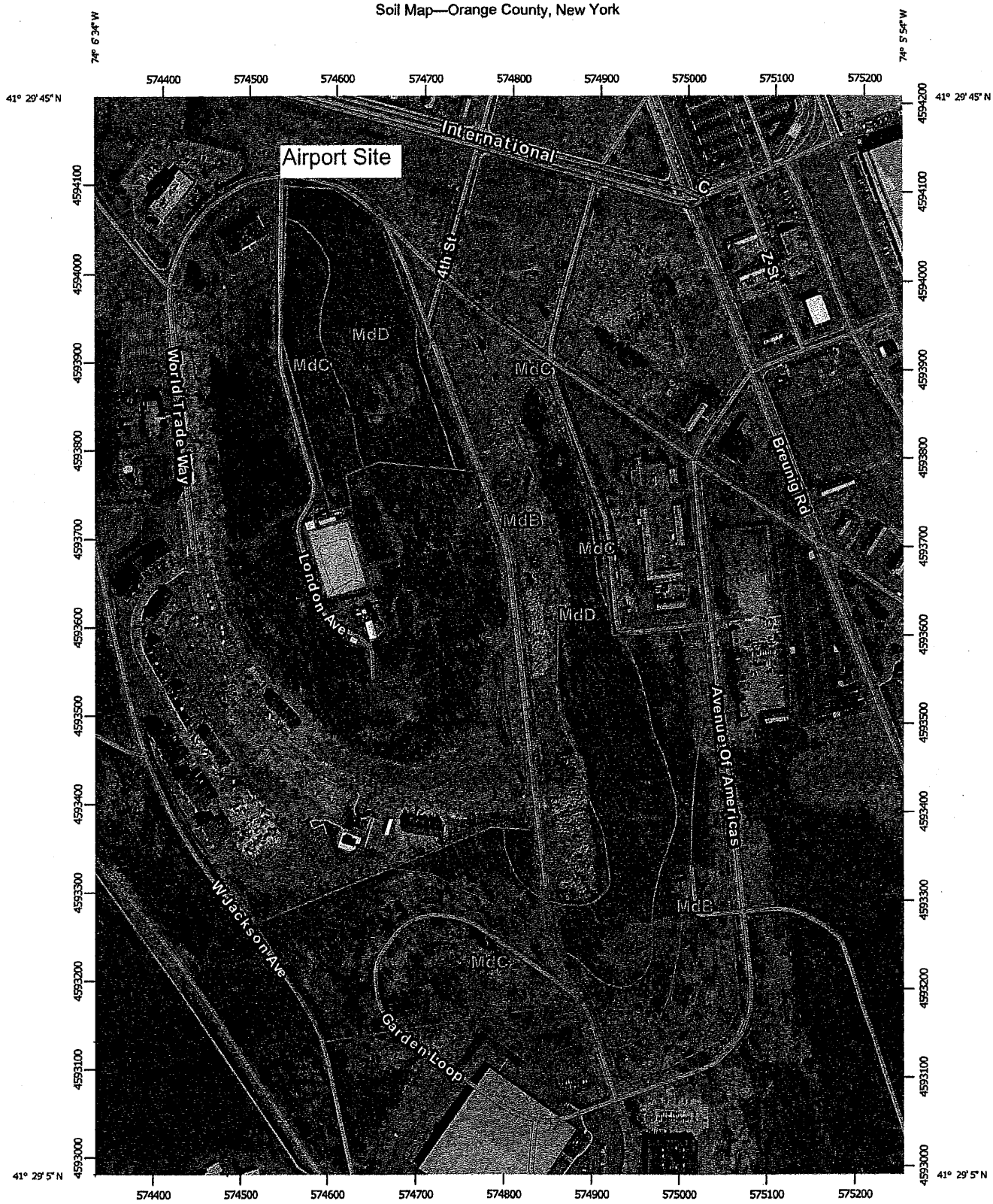
MAP NUMBER
36071C0330E

EFFECTIVE DATE
AUGUST 3, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Soil Map—Orange County, New York



Map Scale: 1:5,940 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Orange County, New York
Survey Area Data: Version 14, Dec 15, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2011—Apr 16, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Orange County, New York (NY071)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	14.9	25.3%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	21.3	36.2%
MdD	Mardin gravelly silt loam, 15 to 25 percent slopes	22.6	38.4%
Totals for Area of Interest		**58.9**	**100.0%**

Hydric rating by map unit(5 categories)

This *Hydric Soil Category* rating indicates the proportion of map units that meet the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is designated as "all hydric,""predominantly hydric," "partially hydric,""predominantly non-hydric," "not hydric," or "unknown hydric," depending on the rating of its respective components.

"All hydric" means that all components listed for a given map unit are rated as being hydric. "Predominantly hydric" means that more than 66 percent to less than 100 percent of components are hydric. "Partially hydric" means that more than 33 percent to less than 67 percent of components are hydric. "Predominantly non-hydric" means that more than 0 percent and less than 34 percent of components are hydric. "Not hydric" means that all components are rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

If soils are wet enough for a long enough period of time to be considered hydric, they typically exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Vasilas, Hurt, and Noble, 2010).

The NTCHS has developed criteria to identify those soil properties unique to hydric soils (Federal Register, 2012). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria use selected soil properties that are described in "Field Indicators of Hydric Soils in the United States" (Vasilas, Hurt, and Noble, 2010), "Soil Taxonomy" (Soil Survey Staff, 1999), "Keys to Soil Taxonomy" (Soil Survey Staff, 2010), and the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

The criteria for hydric soils are represented by codes, for example, 2 or 3. Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.
Federal Register. February, 28, 2012. Hydric soils of the United States.
Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.
Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.
Vasilas, L.M., G.W. Hurt, and C.V. Noble, editors. Version 7.0, 2010. Field indicators of hydric soils in the United States.

Report—Hydric rating by map unit(5 categories)

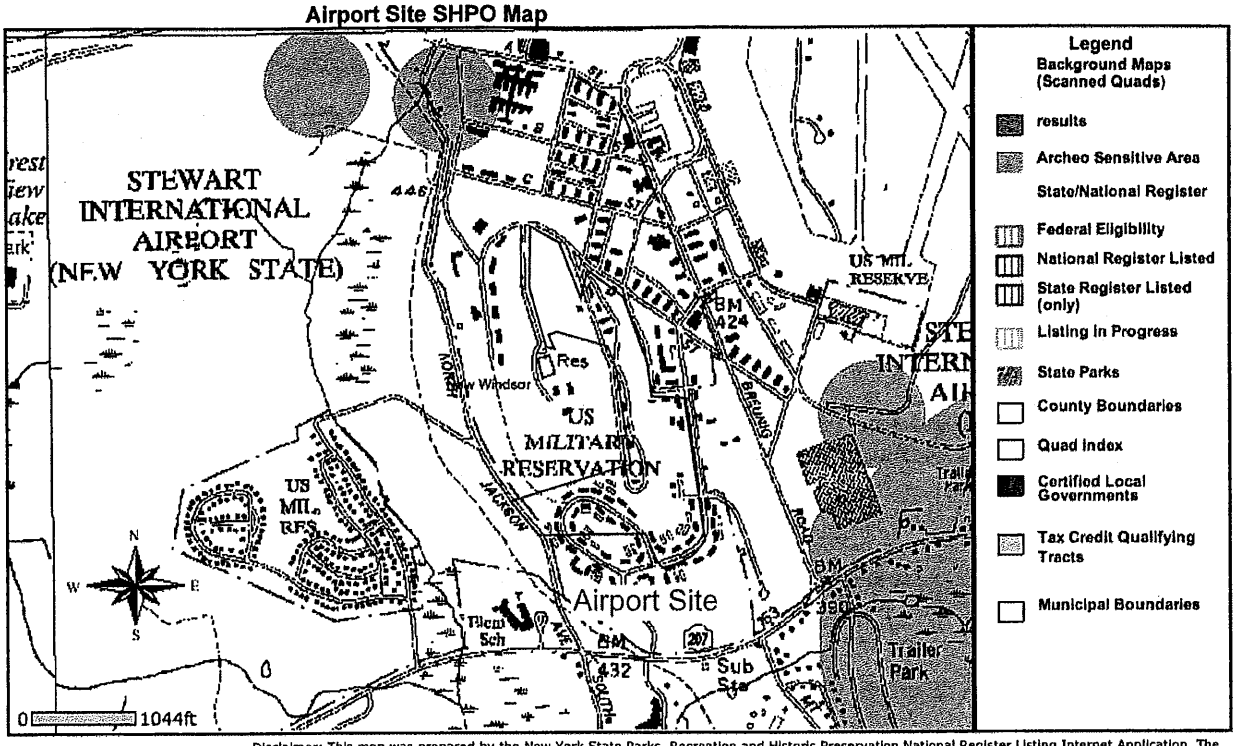
This Hydric Soil Category rating indicates the cumulative percentage of component(s) that meet the criteria for hydric soils within the map units. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric or not hydric. The class ratings are: Hydric (100%), Predominantly hydric (66 to 99%), Partially hydric (33 to 65%), Predominantly nonhydric (1 to 32%), and Nonhydric (0%).

Hydric rating by map unit(5 categories)–Orange County, New York			
Mapunit symbol	Map symbol and map unit name	Hydric Percent of map unit	Hydric category
MdB	MdB—Mardin gravelly silt loam, 3 to 8 percent slopes	0	Nonhydric
MdC	MdC—Mardin gravelly silt loam, 8 to 15 percent slopes	0	Nonhydric
MdD	MdD—Mardin gravelly silt loam, 15 to 25 percent slopes	0	Nonhydric

Data Source Information

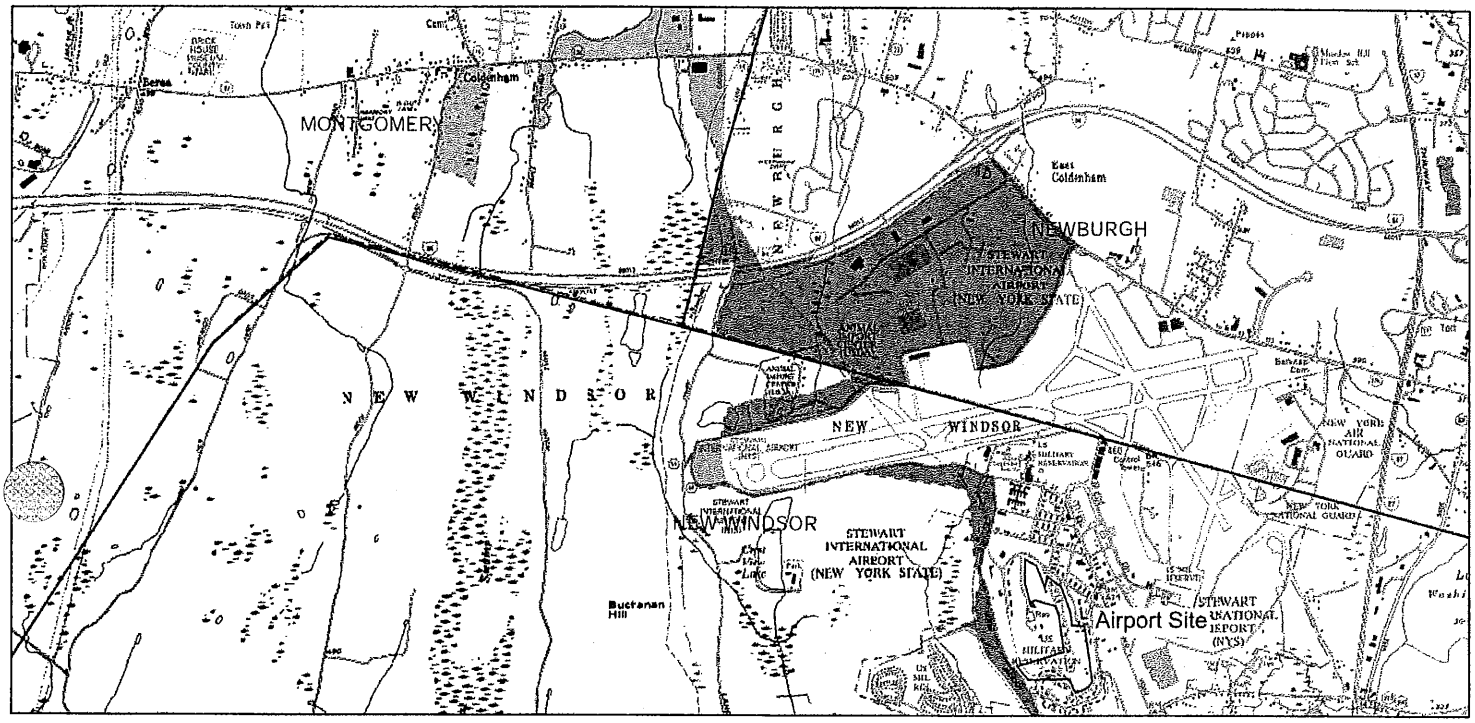
Soil Survey Area: Orange County, New York
Survey Area Data: Version 14, Dec 15, 2013

Airport Site SHPO Map



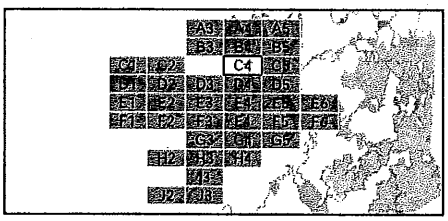
February 21, 2014

Disclaimer: This map was prepared by the New York State Parks, Recreation and Historic Preservation National Register Listing Internet Application. The information was compiled using the most current data available. It is deemed accurate, but is not guaranteed.



Legend

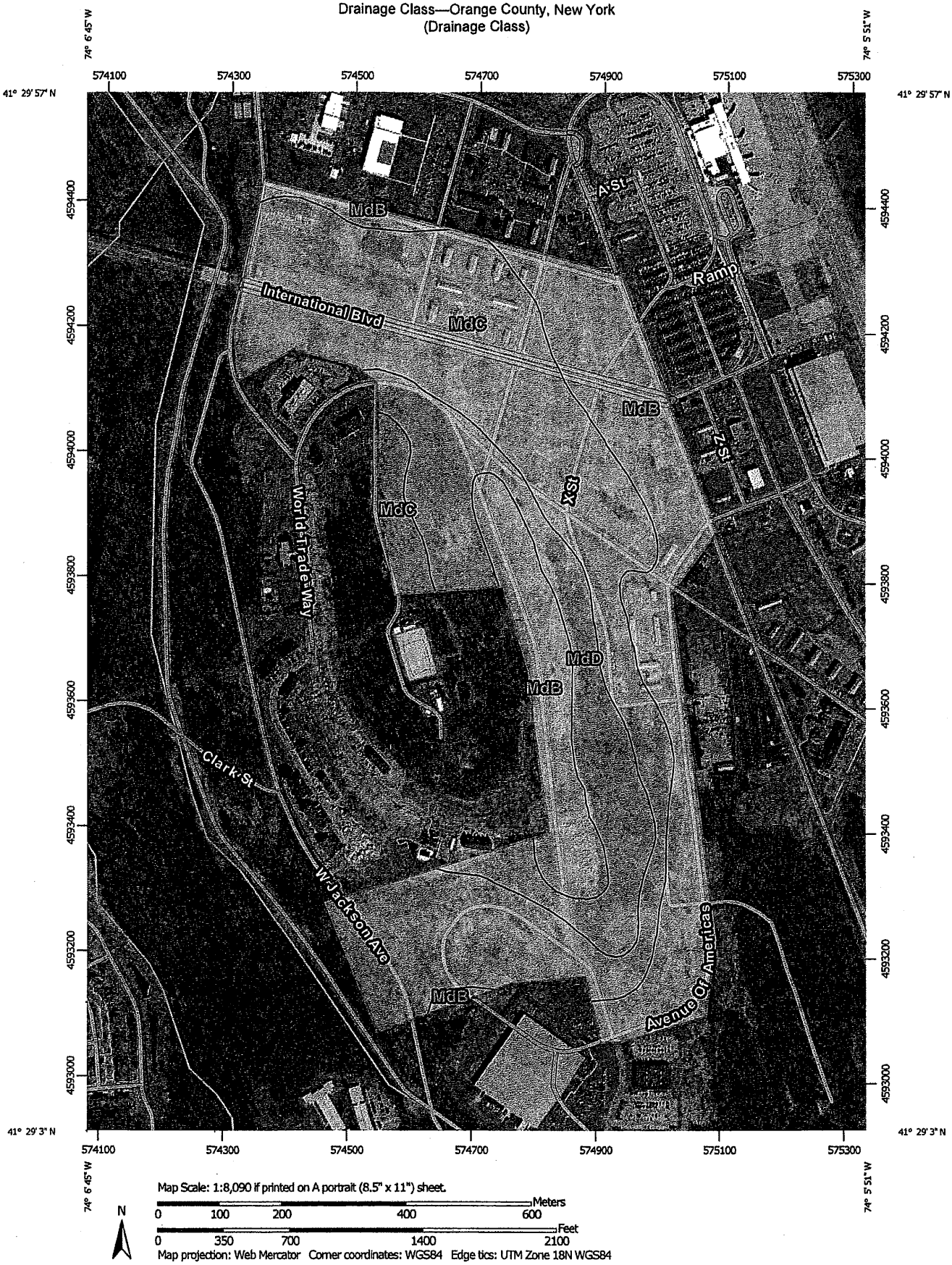
- Town, Village, or City Boundary for New York State
- Automatically Designated MS4 Boundary
- 2000 Census Urbanized Area (No longer UA based on 2010)
- Additionally Designated 2003
- Additionally Designated 2008
- Additionally Designated 2010
- 2010 and 2000 Census Urbanized Area Overlap
- 2010 Census Urbanized Area (Newly Designated)



0 0.25 0.5 1 1.5 2 Miles

N

Drainage Class—Orange County, New York
(Drainage Class)



Map Scale: 1:8,090 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Lines

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Points

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Orange County, New York
Survey Area Data: Version 14, Dec 15, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2011—Apr 16, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Drainage Class

Drainage Class— Summary by Map Unit — Orange County, New York (NY071)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	Moderately well drained	45.3	32.3%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	Moderately well drained	69.7	49.7%
MdD	Mardin gravelly silt loam, 15 to 25 percent slopes	Moderately well drained	25.3	18.0%
Totals for Area of Interest			**140.3**	**100.0%**

Description

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Findings Statement

New York International Plaza

(Previously approved project – located at this site, 2003)

Town of New Windsor

555 Union Avenue
New Windsor, New York 12553
Telephone: (845) 563-4615
Fax: (845) 563-4693

OFFICE OF THE PLANNING BOARD

State Environmental Quality Review Act
Notice of Completion of Final EIS

Lead Agency: Town of New Windsor Planning Board Date: July 23, 2003

Address: 555 Union Avenue
New Windsor, New York 12553

This notice is issued and has been prepared in accordance with Article 8 of the New York State Environmental Conservation Law and 6 NYCRR Part 617, the implementing regulations pertaining thereto (collectively, "SEQRA").

A Final Environmental Impact Statement ("Final EIS") has been completed and accepted by the Town of New Windsor Planning Board, as lead agency, for the proposed action described below. A copy of the Final EIS is attached.

SEQRA Classification: Type I

Name of Action: New York International Plaza/STAS Redevelopment

Description of Action: Redevelopment of the former Stewart Army Subpost (STAS), a 263 +/- acre parcel in the Town of New Windsor. The STAS lands have been ground-leased by the Town of New Windsor for the purposes of economic development. The redevelopment plan contemplates redevelopment in multiple phases to establish a broad range of commercial, industrial, retail, institutional, residential and/or other uses pursuant to existing zoning requirements, including parking, utilities, street, and other improvements and facilities identified as necessary or appropriate as redevelopment proceeds. The action also involves the proposed subdivision approval of Parcel H (128 ±acres) into two lots with a portion of land to be used for the extension of Hudson Valley Avenue.

Location: Former Stewart Army Subpost property, generally bounded by Stewart International Airport to the north and east, Route 207 to the south, and Jackson Avenue to the East in the Town of New Windsor, New York in the Town of New Windsor, New York.

A Copy of the Final EIS and Additional Information may be obtained from:

Contact Person: Mark Edsall, P.E., P.P., Engineer for the Planning Board

Address: c/o Town Hall
555 Union Avenue
New Windsor, New York 12553

Telephone Number: (845) 563-4615

A Copy of this Notice and the Final EIS Sent to:
(One copy of the Final EIS to be sent to these locations)

* Commissioner, Department of Environmental Conservation, 625 Broadway, Albany, New York 12233-0001

* Appropriate Regional Office of the Department of Environmental Conservation

* Office of the Chief Executive Officer of the political subdivision in which the action will be principally located; George J. Meyers, Town Supervisor

* All other involved and interested agencies

New York State Agencies:
Department of Transportation, Poughkeepsie
Department of Environmental Conservation, Main Office
Department of Environmental Conservation, New Paltz
Parks, Recreation and Historic Preservation
Department of Economic Development

County of Orange Agencies:
Department of Health
Department of Planning

Town of New Windsor Agencies:
Town Board
Zoning Board of Appeals

* Persons requesting Final EIS (subject to copying fees)

RESOLUTION ACCEPTING AS COMPLETE THE FINAL ENVIRONMENTAL IMPACT STATEMENT

PREPARED BY THE TOWN OF NEW WINDSOR PLANNING BOARD, AS LEAD AGENCY, WITH RESPECT TO THE NEW YORK INTERNATIONAL PLAZA PROJECT

JULY 23, 2003

WHEREAS, First Columbia International Group, LLC. (the "Applicant") submitted an application to the Town of New Windsor Planning Board (the "Planning Board") requesting subdivision approval to allow the redevelopment of the former Stewart Army Subpost (STAS), a 263 +/- acre parcel, in the Town of New Windsor into the New York International Plaza; and

WHEREAS, the action involves the proposed subdivision approval of Parcel H (128 ±acres) into two lots with a portion of land to be used for the extension of Hudson Valley Avenue; and

WHEREAS, the STAS lands have been ground-leased by the Town of New Windsor for the purposes of economic development. The redevelopment plan contemplates redevelopment in multiple phases to establish a broad range of commercial, industrial, retail, institutional, residential and/or other uses pursuant to existing zoning requirements, including parking, utilities, street, and other improvements and facilities identified as necessary or appropriate as redevelopment proceeds; and

WHEREAS, the location of the project is the former Stewart Army Subpost property, generally bounded by Stewart International Airport to the north and east, Route 207 to the south, and Jackson Avenue to the East in the Town of New Windsor, New York; and

WHEREAS, pursuant to the New York State Environmental Quality Review Act Article 8 of the Environmental Conservation Law, and its implementing regulations (collectively, "SEQRA"), the procedures necessary to coordinate lead agency status have been undertaken and completed and the Planning Board has been duly designated as lead agency; and

WHEREAS, on November 18, 2002, the Planning Board determined that the project may have a significant effect on the environment and issued a positive declaration of significance; and

WHEREAS, a Draft Environmental Impact Statement ("DEIS") was submitted to the Planning Board which was, after careful review by the Planning Board and its consultants, determined on April 9, 2003 to be complete and adequate for public review; and

WHEREAS, on May 14, 2003, the Planning Board conducted a combined public hearing to consider the DEIS and subdivision application at which all members of the public were given an opportunity to submit oral and written comments on the project. The public hearing was closed at the same meeting; and

WHEREAS, the SEQRA public comment period closed on May 27, 2003, more than 43 days thereafter; and

WHEREAS, pursuant to SEQRA, a draft Final Environmental Impact Statement ("Draft FEIS") was prepared in connection with the project; and

WHEREAS, certain written comments were received by the Planning Board after the close of the public comment period, but were, nevertheless included and addressed in the FEIS to provide a full and comprehensive evaluation; and

WHEREAS, the Planning Board, the individual members, the Planning Board Engineer, the Town Engineer, special Planning Consultant to the Planning Board and Town Departments have evaluated the Draft FEIS for accuracy and completeness and suggested revisions to the document which have been incorporated into the Final Environmental Impact Statement (the "FEIS"); and

WHEREAS, the Planning Board does not consider the information and/or issues raised regarding the DEIS to be new or different from the information and analyses contained in the DEIS, however, to the extent that the information and/or issues may be considered as such, such matters do not result in the identification of new or different significant adverse environmental impacts warranting the need for a supplemental EIS; and

WHEREAS, certain information and analyses relating to issues examined in the DEIS were amplified and further discussed in the draft FEIS as a result of comments received from the public and other parties. This material is consistent with information regarding such issues contained in the DEIS. It amplifies and augments information previously considered by the Planning Board and contained in the DEIS and does not identify newly discovered information about significant adverse environmental effects which were not previously addressed. Therefore, the draft FEIS identifies and examines all relevant potential environmental impacts which have been identified; and

WHEREAS, the Planning Board and individual Planning Board members and its consultants have thoroughly examined, evaluated and considered the draft FEIS for the purpose of determining completeness, accuracy and substance of the comments and responses contained therein; and

WHEREAS, all procedures required by SEQRA and other applicable law which need to be completed through the adoption of this resolution have been completed; and

WHEREAS, the Planning Board has determined to accept the Draft FEIS as the FEIS.

NOW, THEREFORE, BE IT RESOLVED that the Planning Board hereby makes the following findings and determinations:

1. The FEIS, which incorporates by reference the DEIS, identifies, includes and responds to all substantive comments, both oral and written, which have been received, and is therefore accepted as complete, adequate and accurate as to form, substance and content.

2. The information and/or issues raised regarding the DEIS are not new or different from the information and analyses contained in the DEIS, however, to the extent that the information and/or issues may be considered as such, such matters do not result in the identification of new or different significant adverse environmental impacts warranting the need for a supplemental EIS and would not aid the Planning Board in analyzing the project and otherwise performing its obligations under SEQRA.

3. To provide comprehensive and thorough responses, the FEIS contains additional information and confirmatory analyses when appropriate to aid the Planning Board in its analytical and decision-making obligations under SEQRA. As more fully discussed in the FEIS, the new information and/or confirmatory analyses contained in the FEIS amplify and further examine issues examined in the DEIS as a result of comments received from the involved agencies and the public. The additional information and analyses are consistent with the examination of issues contained in the DEIS and do not result in the identification of any new or different significant adverse environmental effects. Therefore, a supplemental draft environmental impact statement is not warranted or required and would not aid the Planning Board in analyzing the project and otherwise performing its obligations under SEQRA.

4. The Planning Board hereby authorizes and directs the Secretary to file and distribute, as required by 6 NYCRR §617.12 , the Notice of Completion of FEIS attached hereto as Exhibit A and the FEIS.

5. This Resolution shall take effect immediately.

Town of New Windsor

555 Union Avenue
New Windsor, New York 12553
Telephone: (845) 563-4615
Fax: (845) 563-4693

OFFICE OF THE PLANNING BOARD

NEW YORK INTERNATIONAL PLAZA

RESOLUTION ISSUING A FINDINGS STATEMENT PURSUANT TO THE NEW YORK STATE ENVIRONMENTAL QUALITY REVIEW ACT ("SEQRA")

AUGUST 27, 2003

The TOWN OF NEW WINDSOR PLANNING BOARD, in the County of Orange, State of New York, met in a regular meeting session at Town Hall in the Town of New Windsor, located at 555 Union Avenue, New Windsor, New York on the 27th day of August, 2003, at 7:30 p.m.

James Petro, Chairman, called the meeting to order and the following were present:

_____

_____

_____

_____

_____

The following was moved, seconded and adopted:

WHEREAS, First Columbia International Group, LLC. (the "Applicant") submitted an application to the Town of New Windsor Planning Board seeking subdivision approval of Parcel "H". The request included subdividing the existing Parcel "H" (128+/- acres) into two lots with a portion of land to be used for the extension of Hudson Valley Avenue; and

WHEREAS, the Applicant has entered into a 99-year lease with the Town of New Windsor, as the exclusive developer after a competitive review process, for the express purpose of promoting, accommodating and enhancing economic development on the former Stewart Army Subpost property ("STAS") lands; and

WHEREAS, the 15-year redevelopment plan of the STAS lands contemplates the construction of approximately 2,000,000 square feet of modern facilities, replacing approximately 923,900 square feet of existing obsolete facilities and creating a premier corporate mixed-use development to be known as New York International Plaza ("NYIP"). The mix of uses include: high-tech offices; convention center; hotels; retail; restaurants; corporate residences; education facilities; and light manufacturing; and

WHEREAS, on May 31, 2002, the Planning Board, as lead agency, declared its intent to act as lead agency pursuant to the New York State Environmental Quality Review Act and the regulations promulgated thereunder at 6 NYCRR Part 617 ("SEQRA"), and all involved agencies have agreed to the Planning Board acting as lead agency; and

WHEREAS, on November 18, 2002, the Planning Board determined that the overall redevelopment plan may have a significant effect on the environment and issued a positive declaration of significance; and

WHEREAS, the Applicant voluntarily prepared a proposed outline for the draft environmental impact statement and submitted it to the Planning Board; and

WHEREAS, the Planning Board determined to provide the public an opportunity to commit on the scope of the draft EIS and established a draft scope and made it available for public comment; and

WHEREAS, the Planning Board considered all comments received on the draft scope, and incorporated those which it determined substantive and relevant; and

WHEREAS, a final scope was adopted by the Planning Board on or about February 26, 2003; and

WHEREAS, the Planning Board received draft DEIS documents prepared by the Applicant in December 2002 and later revised April 10, 2003; and

WHEREAS, the Planning Board, based upon its own independent judgment and consideration of the DEIS, the recommendation of the McGoey, Hauser and Edsall Consulting Engineers, PC, the Town Engineers and Planning Board Engineers, and the recommendation of Stuart Turner and Associates, the Planning Board's special consultant, found and determined that the DEIS was satisfactory with respect to its scope, content and adequacy for purposes of commencing public review and caused the DEIS, supporting documents, the Notice of Completion of the DEIS and the Notice of Joint Public Hearing to be filed, circulated, published and made available for copying in accordance with SEQRA and other applicable law; and

WHEREAS, pursuant to SEQRA and the Subdivision Regulations, a joint public hearing was conducted on May 14, 2003 at which all members of the public were given an opportunity to submit oral and written comments on the project and, thereafter, the public hearing was closed; and

WHEREAS, the Planning Board accepted the submission of additional written comments on the DEIS through May 27, 2003, which comments, together with the oral public hearing comments, were incorporated into the FEIS (as defined below); and

WHEREAS, detailed comments were received from the Town Engineer and Planning Board Engineer on the DEIS; and

WHEREAS, detailed comments were received from the special consultant to the Planning Board on the DEIS; and

WHEREAS, no involved agency provided oral or written comments; and

WHEREAS, pursuant to SEQRA the Planning Board caused a proposed Final Environmental Impact Statement with Appendices, which incorporated the DEIS (collectively, the "FEIS") to be prepared and each individual Planning Board member received and reviewed the proposed FEIS; and

WHEREAS, on July 23, 2003 the Planning Board adopted the proposed FEIS as the FEIS; and

WHEREAS, certain information and analyses relating to issues examined in the DEIS were amplified and further discussed in the FEIS as a result of comments received from the public and other parties, and

WHEREAS, the Planning Board determined, in connection with its acceptance of the FEIS, and after carefully considering and applying the criteria required pursuant to SEQRA, that the FEIS identified and examined all relevant potential environmental impacts which have been identified and that no supplemental environmental impact statement was required or warranted; and

WHEREAS, the Planning Board determined that the FEIS identified and examined all relevant potential environmental impacts which are reasonably anticipated as a result of the project; and

WHEREAS, the Planning Board thoroughly and objectively considered the substantive and relevant information provided in the proposed FEIS and sought the advice of the Town and Planning Board Engineers and the special consultant; and

WHEREAS, more than 10 days have passed since the acceptance and filing of the FEIS; and

WHEREAS, all procedures required by SEQRA, the Subdivision Regulations and other applicable law have been completed.

NOW, THEREFORE, BE IT RESOLVED THAT at each stage of the SEQRA proceedings, the Planning Board has encouraged comment from all of those interested and involved, and has provided sufficient time for preparation and consideration of and comment on the DEIS and the FEIS, as required by SEQRA in order to permit such comment and to develop a full and complete understanding of the project. As a result of its independent examination, and careful review, the Planning Board finds, on balance, after due consideration of all relevant documentation and comments, it has more than adequate, and accurate information with which to evaluate all of the relevant benefits and potential impacts of the overall redevelopment plan.

NOW, THEREFORE, BE IT FURTHER RESOLVED THAT:

I. SEQRA FINDINGS

1. The Planning Board has considered the relevant environmental impacts, facts and conclusions disclosed in the FEIS.

2. The Planning Board certifies that the requirements of 6 NYCRR Part 617 have been met.

3. The Planning Board has weighed and balanced relevant environmental impacts with social, economic and other considerations.

4. The Planning Board affirms that consistent with social, economic and other essential considerations from among the reasonable alternatives available, the action is one that avoids or minimizes adverse environmental impacts to the maximum extent practicable, and that adverse environmental impacts will be avoided or minimized to the maximum extent practicable by incorporating as conditions to the decision those mitigative measures that have been identified as practicable. See Section VI - Mitigation Measures of this Findings Statement.

II. SUPPORTING FACTS/CONCLUSIONS

The following facts and conclusions are derived from the FEIS, other documents, reports, submittals and testimony, and other relevant information, including the personal knowledge and familiarity of the Planning Board members with the overall redevelopment plan, its location and its surrounding areas, comprising the record of these deliberations. They are set forth herein as the basis of the Planning Board's decision and document the environmental, social, economic and other factors and standards used by the Planning Board in making this decision.

A. BACKGROUND/SCOPE OF REVIEW

1. At the height of its use, existing army subpost facilities included approximately 158 structures totaling approximately 923,900 square feet of gross floor area, approximately 5.8 miles of asphalt paved roadways with its own storm sewer system, water treatment and distribution system, wastewater treatment plant and sanitary sewer system, low pressure natural gas distribution system and overhead electric, telecommunication and cable TV wires.

2. In the 1970's the USMA took control of the STAS lands and operated the facility for housing and support facilities for West Point. In the 1990's USMA decided to consolidate their facilities to West Point. Disposal of the STAS lands became a main focus. Through special legislation passed by the United States Congress, the STAS lands were transferred to the Town of New Windsor to redevelop the lands for economic purposes.

3. Pursuant to such legislation, the Town of New Windsor leased the STAS lands to the Applicant to promote, accommodate and enhance economic development. The redevelopment plan will spur both local and regional economies, re-establish a major employment center and generate employment opportunities and increased revenues throughout the region.

4. The Applicant has prepared a plan for redevelopment of STAS representing its current vision for redevelopment. The redevelopment plan generally utilizes the existing roadways, underground gas, water, sanitary and storm sewers and contemplates renovating approximately ten existing buildings.

5. The overall redevelopment plan will be a dynamic mix of approximately 2,000,000 square feet of modern facilities replacing the existing 923,900 square feet of existing, obsolete buildings. Over the estimated 15 year build-out, the mix of uses are contemplated to include: high tech offices, convention center, hotels, retail restaurants, corporate residences, education facilities, light manufacturing and service station.

6. Implementation of the redevelopment plan will be on a site-by-site or project-by-project basis, over the expected 15-year build-out. Any required permits and approvals for individual projects will be obtained as and when required. The Planning Board will review the individual plans taking into account the determinations of the SEQRA findings.

7. The FEIS was prepared to identify an overall mix of development within the confines of the STAS lands, as permitted by and in reliance upon the Town's Zoning Law and as obligated by the ground lease. The Planning Board recognizes the Applicant's need to be flexible in locating and mixing uses so that this redevelopment plan can proceed in light of then-existing market forces.

8. The FEIS evaluated environmental impacts based on a ±2.5 million square foot mixed use build-out, a size 25% larger than actually currently contemplated. This adjustment factor provides a cushion in the analysis of impacts to account for the fact that certain mixes may result in greater (or lesser) individual environmental impacts than other mixes at the same size. The adjustment factor allows flexibility in the mix of uses that enables the redevelopment to react to current and future market demands.

9. That need has been reasonably balanced against the Planning Board's need to have a level of detail sufficient to permit it to identify, evaluate, and mitigate likely environmental impacts.

10. The overall redevelopment plan establishes specific site development envelopes for certain sizes and types of uses, in conformity with the Town's Zoning Law. The site development envelopes were located to establish the Applicant's current vision for the appropriate long-term redevelopment of the STAS lands. Because the size and type of use have been identified in each development envelope, the environmental impacts associated with such development can be and were generally identified and evaluated in the DEIS, such as cultural resources, vegetation and wildlife, water resources, demographic characteristics, soils, geology, and topography. Identifying size, site location and type of use permits identification and consideration of projected impacts such as water usage, sewer usage, stormwater management, traffic, wetlands, air quality, noise, infrastructure needs, community services, and economic impacts. Establishment of design guidelines and application of land use, and zoning requirements permit the Planning Board to monitor visual impacts, land use, and zoning.

11. Because the Planning Board must approve site plans for each individual project and future subdivisions for the individual projects, the Planning Board will have the opportunity to examine an individual project, its layout, and the extent to which the resulting impacts are already covered by this Findings Statement. If the Planning Board determines that a further (or supplemental) EIS is warranted because an actual individual project differs significantly from that considered in this review, the Planning Board will require such supplemental EIS at that time.

12. The Planning Board has established performance criteria derived from the information contained in the FEIS to assure that the impacts remain within the scope of impacts analyzed. In furtherance thereof, the Planning Board has created a New York International Plaza Individual Project Checklist ("Checklist"), a draft of which is attached to this Findings Statement as Schedule A (final versions of the checklist may be updated as projects are reviewed in the future). The Checklist will enable the Planning Board to: 1) track future redevelopment projects; 2) identify when certain development thresholds have been reached, necessitating construction of the identified traffic and other improvements, and 3) ensure parameters identified in the FEIS are met. As a result, to the extent actual development within the mix of uses changes, the Planning Board has established a mechanism to determine that the overall environmental impacts remain within the range examined in the FEIS or to undertake any necessary further SEQRA review.

13. In accordance with the requirements of SEQRA, the FEIS provides an exhaustive examination of relevant potential environmental impacts, including potential secondary and cumulative impacts, which may result from the redevelopment plan.

14. The record upon which this Findings Statement is based is the result of approximately 16 months of studies and analyses by the Planning Board.

15. Professional studies were completed by qualified experts identifying and analyzing traffic impacts, wetland impacts, stormwater impacts, cultural resources impacts, sanitary sewer impacts, aesthetic impacts and others. The FEIS contains hundreds of pages of material.

16. The FEIS contains reasonably detailed information concerning the redevelopment plan, a reasonable description of the methodology used to undertake the environmental impact review, and detailed plans and expert reports which specifically describe and analyze in greater detail a variety of potential environmental areas.

17. The Town and Planning Board Engineers are licensed professional engineers and are highly respected in the Town and Region. The Engineers have been actively involved in the environmental impact review and analysis, which has been completed for this project. The input of the Planning Board Engineer has been sought and received by the members of the Planning Board at each stage of the Planning Board's review and consideration of the project.

18. The Planning Board also retained the services of a special consultant, a recognized expert in environmental planning, to assist the Planning Board in its effort to fully evaluate all potential environmental impacts of the overall redevelopment plan. The special consultant has provided detailed comments to the Planning Board regarding the scoping document, the DEIS and FEIS to assist the Planning Board in its obligation to take a hard look at the potential impacts of the overall redevelopment project.

19. No involved agency provided written comments to the Planning Board regarding the DEIS and only one person spoke at the public hearing and submitted comments to the Planning Board. That person generally supported the overall redevelopment plan concept.

20. The Planning Board is also aware of other separate projects, including roadway improvement projects that have been completed. Those projects are in the same general area within the Town, have been planned separately, have their own unique funding sources, are not interdependent and are not part of a larger integrated plan. They include the Interstate 84/Drury Lane connection to Stewart Airport, Tenant Housing Redevelopment and an expansion to the airport. Nevertheless, they were all considered in the FEIS.

21. The traffic review and analyses assumed completion of the Interstate 84/Drury Lane connection to Stewart Airport and construction of Terrace Housing. The traffic volumes and other traffic-related impacts studied for those projects were incorporated as appropriate into the background/no build conditions for the redevelopment plan. Therefore, the FEIS identified and evaluated traffic and related impacts of the redevelopment plan cumulatively to those arising from the Interstate 84/Drury Lane connection and Terrace Housing.

22. The above scope of review has provided the Planning Board with a comprehensive basis to evaluate reasonably foreseeable environmental impacts associated with the overall redevelopment plan. The scope of review identifies and analyzes potential environmental impacts of development, which has not even been definitively proposed, allowing the Planning Board to consider those potential impacts in reaching its decision with respect to the overall redevelopment plan.

B. PROJECT IMPACTS

1. LAND USE AND ZONING

a. Generally, the STAS lands are situated along the northern side of Route 207 (Little Britain Road) and the western side of Breunig Road, with the Stewart International Airport bordering the site to the east and to the north.

b. The STAS lands are located in an Airport-1 (AP-1) zoning district. The proposed mix of uses are all permitted uses within this zoning classification.

c. The currently contemplated and the examined alternative mix of uses is based upon, and was prepared in furtherance of the Applicant's obligations under the ground lease and upon the existing zoning for the project site.

d. The overall redevelopment plan is consistent with the Town's long-range plans. The Planning Board supports the proposed mix of uses for the overall redevelopment as an appropriate use for these lands. The Planning Board recognizes that the Applicant has already made a substantial financial investment including construction toward reaching the goal of the overall redevelopment plan. The Applicant has relied on the mix of existing permitted uses in establishing the overall redevelopment plan. Such proposed and permitted uses are consistent with the Town's long range plans, a goal the Planning Board seeks to implement. Unless otherwise agreed to by the Applicant, the Planning Board will support the continuation of the currently permitted uses and will not act contrary to such continuation.

e. The existing, obsolete buildings within the site will be redeveloped or demolished consistent with the requirements of the Zoning Law.

f. In connection with future site plan applications for individual redevelopment projects, future subdivision applications may be made either concurrently or individually.

g. No adverse impacts have been identified regarding land use and zoning.

2. PROJECT BENEFITS

a. Since the Town is the owner of the land, no property tax revenue is currently derived therefrom. Consistent with the Town's ground lease with the Applicant, the Town's goal (and the purpose of the Federal legislation) of economic development for the STAS Lands will be realized.

b. Redevelopment of the STAS lands will spur both local and regional economies, re-establish a major employment center and generate employment opportunities and increased revenues throughout the region.

c. Redevelopment will create approximately 5,300 jobs, generate over $500 million in new construction and equipment purchases, create over $72 million in property taxes [PILOT payments] and produce over $79 million in sales tax revenues.

d. Any private funding of certain public improvements (*i.e.* traffic, water, and sewer) is a significant benefit for the Town and districts in the form of current and future cost savings.

e. The Washingtonville School District will experience a significant net annual increase in school tax revenues.

f. Based on the analyses which have been completed regarding projected tax revenues, the overall redevelopment plan will result in a net increase in tax revenues to the Town.

g. The overall redevelopment plan will also likely result in other beneficial impacts to the Town such as multiplier effects experienced through job creation.

h. The substantial increase in municipal revenues derived from the redevelopment will far outweigh any increased costs to the Town to provide services for NYIP, even if the full build-out is not ultimately achieved.

3. WATER AND SEWER RESOURCES

- **Groundwater**

a. The overall redevelopment plan is not anticipated to have any significant impact on groundwater, significantly sized water bodies, floodplains, navigable waterways or coastal zones located on or adjacent to the Site. No primary, principal or sole source aquifers exist under the STAS lands.

- **Stormwater**

a. The STAS lands are located within the Moodna Creek sub-basin of the Lower Hudson River Basin, which is located within the North Atlantic Slope Basin. Stormwater runoff from the eastern half of STAS lands typically follows a path from Silver Stream to Moodna Creek before entering the Hudson River. Alternatively, the western half of STAS lands drains into Beaver Dam Lake.

b. Implementation of the redevelopment plan will increase the impervious area with the construction of paved parking areas and new buildings. Stormwater management measures will be required to address surface water flow. The proposed stormwater management plan model controls the increase in stormwater run-off from future redevelopment projects without adversely affecting down gradient conditions.

c. The Storm Water Management Plan (SWMP) addresses stormwater management for the overall redevelopment plan. It specifically addresses anticipated maximum runoff based on the full build out for specific storm intervals. It conceptually identifies and establishes those stormwater management features and practices that will achieve required stormwater quality and quantity goals.

d. The existing stormwater management system was modeled in accordance with Town of New Windsor requirements and NYSDEC regulations.

e. Four regional detention facilities have been designed to accommodate full build-out. They will be constructed in stages to accommodate per project flows. The individual project design will permit, to the extent necessary, future expansion of the detention facilities by the creation of additional "cells". In other words, the detention facilities will be expanded by adding onto the existing facility.

f. In addition to the regional detention facilities, local on-site facilities (temporary and/ or permanent) within an individual project may be utilized to accommodate runoff and quality. Any local on-site facilities will be designed to achieve the same quantity and quality control goals as the regional system.

g. As initial building sites are developed, temporary facilities may be constructed within or within close proximity of the proposed development.

h. In connection with individual project layouts, water quantity and quality requirements of the NYSDEC's Phase II Stormwater Regulations must be addressed as may be required for such projects.

i. Storage of chemicals and petroleum will be done in conformance with State and Federal regulations so as to minimize potential impacts to stormwater facilities.

j. No significant adverse impacts were identified as a result of the stormwater management plan.

- **Water Distribution System**

a. The STAS lands and facilities are currently serviced by the Town's Riley Road Water Filtration Plant.

b. Implementation of the redevelopment plan will generate a maximum daily demand for water of approximately 333,296 gpd. Previously, the STAS facilities generated an average daily demand of approximately 455,400 gpd as a military facility.

c. The current water distribution system provides adequate service with daily usage of 455,400 gpd. The existing system should adequately distribute potable water for the redevelopment projects. Distribution pipe sizes may be increased or other measures implemented to improve fire flow conditions in connection with individual project developments, as appropriate. Any such improvements may be performed by the water district and all related costs of such improvements will be assessed against benefited properties.

d. The overall redevelopment plan will be sequenced or scheduled, such that available capacity of the Riley Road Plant will not be exceeded until such time that the plant capacity has been increased or such additional development is otherwise approved by the Town.

e. No significant adverse impacts have been identified regarding water distribution services as a result of the overall redevelopment plan.

- **Sewer Resources**

a. The current sewer collection system facilities adequately provides service.

b. Implementation of the redevelopment plan will generate a maximum daily wastewater flow of approximately 333,296 gpd. The former uses generated an average daily demand of approximately 455,400 gpd as a military facility.

c. Caesars Lane treatment facility has a current permitted capacity of 5.0 MGD, with future plans to expand to 10.2 MGD. It has excess capacity of 250,000 GPD.

d. The Applicant also acquired 200,000 GPD capacity from the Moodna Basin Development (MBD). As stated above, the estimated demand at full build out of the overall redevelopment project will be approximately 333,296 GPD, which will provide sufficient capacity for the overall redevelopment plan. To the extent required at that time, available additional capacity may be obtained from the MBD. Construction will be sequenced or scheduled such that available capacity at that time will not be exceeded or development has been otherwise approved by the Town.

e. The system has experienced Inflow and Infiltration (I&I) problems over the years due to a function of the of the age of the existing sewer system, construction materials used and construction practices at that time.

f. Any I & I problems will be addressed by replacing and/or repairing the existing sanitary sewer facilities (piping and manholes) or implementing other measures within the STAS lands, as deemed acceptable by the Town, as individual projects are constructed. Any such measures will benefit the sewer system by removing or repairing the lines which allow unwanted inflow into the system. Such work may be performed by the sewer district, in which case all related costs of such improvements will be assessed against benefited properties.

g. No significant adverse impacts have been identified regarding sewer resources as a result of the overall redevelopment plan.

4. UTILITIES

a. Implementation of the redevelopment plan will eventually replace the overhead utility lines with electric/ telecommunication duct bank system.

b. Central Hudson Electric and Gas (Central Hudson) provides electric and gas service to the Site. Central Hudson has indicated that sufficient capacity to service the individual projects from the existing facilities is available.

c. No significant adverse impacts are anticipated for electric and gas.

d. Telecommunication services are provided by Verizon and Frontier Communications. Service to the Site is available and no significant adverse impacts are anticipated for telecommunications.

e. No significant adverse impacts have been identified regarding utilities as a result of the overall redevelopment plan.

5. WETLANDS

a. There are no New York State regulated wetlands on the STAS lands.

b. There are 5 discrete small federally protected wetlands identified totaling ±0.6 acres. They are shown in Figure 2.8.1-1 in the DEIS.

c. Future development proposals will be designed to avoid or minimize any impact to these areas. Given the shape, size and relationship of the federally regulated wetlands to the contemplated overall redevelopment, it is likely that disturbance will be avoided. If this is not possible, the Applicant will be required to obtain any necessary permits from the USACOE. Conformance to such permitting requirements will avoid or minimize any environmental impacts likely to occur as a result of such disturbance.

6. GEOLOGY

a. According to mapping provided in the USDA Soil Conservation Survey for Orange County, New York (1981), six general soil types exist across the site.

b. The majority of the soils are classified as Mardin soils - MdB, MdC and MdD. The MdB and MdC soils are the dominant soil types and are generally located across the central portion of the site. The Madalin soils (Ma) are located across the southeast corner of the site. The Bath-Nassau soils (BnB) cover a very small portion near the southeast corner of the site near Breunig Road. The Erie soils (ESB) cover a small portion of the site to the south, near NYS Route 207. The Swartswood and Mardin (SXC) soils are located in a small pocket on the southwest portion of the site. The Udorthents soils (UH) are located in the northern portion of the site near the existing Wastewater Treatment Facility.

c. Topography will not be significantly altered by the individual projects by taking a balanced cut-fill approach during redevelopment. Potential impacts during construction relate to the potential for erosion, generation of dust, removal of rock and possible occurrence of seasonal high ground water table.

d. Specific erosion control plans will be prepared as required prior to construction to control runoff and dust generation for each individual site during construction. The plans will be designed to retain soil and remove it from stormwater reaching water bodies or adjoining properties. Construction of each site may include a number of temporary erosion control measures, as required by the NYSDEC and/or sound construction practices. Following construction, the erosion control measures will be managed and maintained consistent with the recommendations in the *New York Guidelines for Urban Erosion and Sediment Control.*

e. Blasting may be used to excavate bedrock. However, the depth to bedrock is greater than four feet. Therefore, it is unlikely that bedrock will be encountered.

f. Potential impacts associated with any blasting which may occur are addressed in the DEIS by establishment of detailed guidelines and mitigation measures to address such impacts. Adherence to these guidelines and measures will assure that there will be no significant adverse environmental impacts (such as noise, vibration, damage to nearby buildings and structures or debris) resulting from any blasting which may be required.

g. Blasting will not be used to demolish aboveground buildings or structures.

h. No significant adverse impacts have been identified regarding geology as a result of the overall redevelopment plan that have not been adequately mitigated to the maximum extent practicable.

7. TRANSPORTATION

a. A traffic impact analysis was conducted by the BL Companies to evaluate the potential traffic impacts of the overall redevelopment project on the area highway system.

b. Such analysis considered proposed roadway improvements (including ones under construction), as well as roadways within the NYIP. All such proposed improvements were assumed to be in place for the full build out of the overall redevelopment project. Such planned improvements to be constructed were evaluated in the following traffic reports: 1) New York State Thruway Authority Contract D211816, Reconstruction of C Street, 2) Stewart Airport Access Improvement Project and 3) Stewart International Airport, Airport Master Plan Update.

c. The improvements include the relocation of Sue Kelly Avenue, extension of Hudson Valley Avenue, removal of the eastern section of Airport Center Drive and the removal of the northern section of Hudson Valley Avenue.

d. The traffic impact study completed roadway capacity analyses to determine roadway improvements, if any, required to maintain acceptable traffic flow and safety.

e. Primary access to NYIP will be from I-84 via the Stewart Airport Access Improvement Project (Drury Lane Connector) with secondary access to be from NYS Route 207 via Breunig Road and Hudson Valley Avenue. Each access point will be signalized.

f. Capacity and level of service analysis were performed for the following intersections:

Signalized

- Route 207 at Drury Lane
- Route 207 at Hudson Valley Avenue
- Route 207 at Breunig Road
- Route 207 at Route 300 (Westerly Junction)
- International Boulevard at World Trade Way
- International Boulevard at Aviation Avenue
- International Boulevard at Breunig Road

Unsignalized

- Breunig Road at Sue Kelly
- World Trade Way at Airport Center Drive
- Airport Center Drive at Hudson Valley Avenue/Aviation Avenue
- Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue

g. The results of the analyses indicates that at certain stages of the overall redevelopment build-out, roadway improvements are required to maintain acceptable traffic flow and traffic safety with improvements to the following intersections:

h. Transportation improvements to accommodate the traffic generated by the overall redevelopment include the following:

- *Route 207 at Route 300 (westerly junction)* – Increase traffic signal cycle lengths for both the morning and afternoon peak hours and modify signal timings. It is anticipated that these improvements will be implemented immediately as the redevelopment initially proceeds.

- *International Boulevard/Connector Road at World Trade Way* – Widen along the southerly side of the east-west Connector Road to provide an exclusive eastbound right turn lane. Re-stripe the northbound Airport Center Drive approach to provide an exclusive left turn lane and a shared left/through/right turn lane. Widen the northerly side of the Connector Road to provide the proper acceptance width for the dual left turn movement. The improvements required for the dual left-turn-only lane are anticipated to be needed after approximately 70% (1,735,000 SF) of the redevelopment is complete.

- *International Boulevard at Aviation Avenue (formerly 4th Street)* – Re-stripe the Aviation Avenue northbound approach to provide a left turn lane and a shared left/through/right turn lane. Widen the northerly side of the International Boulevard west of Aviation Avenue for the dual left turn movement. The improvements required for the dual left-turn-only lane are anticipated to be needed after approximately 80% (approximately 2,012,000 SF) of the redevelopment is complete.

- *Airport Center Drive (formerly D Street) at Aviation Avenue (formerly 4th Street)/Hudson Valley Avenue (formerly Aviation Avenue* – Reconstruct the northeasterly corner of the intersection to provide a channelized right turn lane. Modify the traffic control by removing the existing stop signs from the Hudson Valley Avenue and Aviation Avenue approaches and installing stop signs on the World Trade Way approaches. The improvements required for the channelized right-turn-only lane are anticipated to be needed after approximately 90% (2,264,00 SF) of the redevelopment is complete.

- *Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue* – Modify the traffic control to provide stop signs on both the Bill Larkin Drive and Tozzoli Avenue approaches. These improvements are anticipated to be required upon completion of the Stewart Airport and I-84 Connection.

i. The traffic study concluded that completion of these improvements will enable each intersections to function efficiently and safely with the additional vehicular traffic resulting from the full build out with resulting acceptable LOS and volume to capacity ratios.

j. Taking into account the identified improvements, and their timing, the potential adverse traffic impacts are mitigated to the maximum extent practicable.

k. In summary, taking into account the identified mitigation measures, traffic flow conditions at each of the above-referenced intersections will be maintained or improved for the overall redevelopment plan.

8. AESTHETIC RESOURCES

a. As noted above, the STAS land contains 158 buildings/structures that are vacant and/or obsolete, or both. Such property is currently a vacant, former United States Army subpost.

b. The visual character of the site will be altered from the existing military style buildings of the former STAS to a master-planned, mixed-use commercial facility.

c. The proposed buildings along with the elimination of overhead wires and proposed landscaping will provide a positive impact on the visual landscape of the STAS lands.

d. Development guidelines were identified in the DEIS.

e. The development guidelines include:

- curb cuts/driveway access
- parking lots/standards
- site lighting
- landscaping
- fences/walls
- monument signage
- flagpoles
- utilities
- street lighting
- building facade
- building signage

f. The development guidelines are intended to establish and maintain the character of the redevelopment as a state-of-the-art commercial campus.

g. The implementation of the development guidelines and application of land use and zoning requirements permit the Planning Board to monitor visual impacts, land use and zoning.

h. The Planning Board determines that the development guidelines ensure that the impacts remain within the scope of impacts analyzed.

i. No significant adverse visual impacts associated with the redevelopment plan have been identified.

9. COMMUNITY SERVICES

- **Fire, Police and Emergency Services**

a. In order to assess the impacts (or compatibility) of the proposed redevelopment with the community services, the Applicant contacted the providers of those services and requested their input. Those providers responded. Those providers are in the best position to assess the impacts, if any, within the scope of services they provide.

b. The providers (police, fire and emergency) have responded that no significant adverse impacts with respect to such services are anticipated from the overall redevelopment plan.

c. Based on evaluations performed and responses received from emergency services representatives, implementation of the redevelopment plan will not have an adverse impact on emergency services.

- **Recreation and Education**

a. Although the overall redevelopment plan contemplates a minor corporate housing component, it is not expected to generate a significant amount of school-aged children that might impact the school district. Educational facilities will significantly benefit from receipt of school taxes from previously tax-exempt property.

10. AIR QUALITY AND NOISE

a. Implementation of the overall redevelopment plan will not produce any measurable changes in local or regional climate, or result in a significant adverse air impact whether through construction, operation, or related transportation.

b. Odors anticipated with overall redevelopment plan are consistent with those that currently exist both on-site and in the surrounding area.

c. During construction, noise generated by construction equipment can reach high levels. However, it is likely that any on-site construction noise will be short duration and generally overridden by the daily operations of the adjacent airport.

d. There are no potential adverse impacts on air quality as a result of the overall redevelopment plan.

11. CULTURAL RESOURCES

a. The DEIS provided an extensive evaluation of cultural resources.

b. The only resource identified which was screened as potentially significant was the Sayre-McGregor House. It was evaluated in detail in a report dated January 1998 entitled *Cultural Resources Input to the Environmental Baseline Study - Stewart Army Subpost* (prepared by The Greeley-Polhemus Group, Inc. and John Milner Associates, Inc.) in connection with the transfer by the Federal government of the STAS lands.

c. The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) by letter dated February 27, 1998, approved the final cultural resources report conclusion that there would be no potential adverse impacts on cultural resources, including the Sayre-McGregor House.

d. A detailed evaluation of the Sayre-McGregor House was completed applying criteria B and C for potential NHRP eligibility. The report included assessment of other similar architecture in the Town of New Windsor and neighboring communities, the extent to which the original structure has been modified, and the quality of the original construction. It concluded that the Sayre-McGregor House was not eligible for inclusion on the National Register of Historic Places because it does not possess the characteristics required for NRHP listing.

e. On May 22, 2003, OPRHP submitted an evaluation form suggesting that the Sayre-McGregor House may meet eligibility criteria for inclusion in the National Register of Historic Places.

f. Based on the more detailed and extensive analysis completed by a professional consultant the Planning Board believes that the Sayre-McGregor house is not eligible for inclusion on the National Register of Historic Places.

g. Even if OPRHP adheres to its current position (May 22, 2003), the Applicant has represented that it will redesign the stormwater detention facilities so that the house can be preserved, thereby avoiding any potential significant adverse environmental impacts to it.

h. In furtherance thereof, the Applicant has shown that sufficient space and capacity exist to modify the facilities as shown without affecting other elements of the redevelopment plan. Taking into account the modifications, stormwater management facilities continue to be sufficient to accommodate expected stormwater volumes and quality in such facilities.

i. Implementation of the redevelopment plan will not have an adverse impact on cultural resources, taking into account the potential modifications to the stormwater facilities.

12. VEGETATION AND WILDLIFE

a. This site has already been developed (a former self-contained military base) and much of the natural vegetation has already been cleared. The remaining vegetative resources on-site are common to the area. The loss or conversion of these types of vegetation is considered a minor impact.

b. Clearing at any individual site will be undertaken in connection with individual projects, taking into account actual construction needs, physical site characteristics, zoning requirements, and other relevant factors.

c. Major plant communities on the site, as defined by Reschke in "Ecological Communities of New York State," include mowed lawn, successional upland old-field, successional upland shrub, and successional hardwood forest. In addition to these upland plant communities, there are also wetland plant communities.

d. There are no state or federally listed threatened or endangered species of vegetation presently occupy the site, nor is critical habitat present for any animal species.

e. A detailed evaluation of a threatened species, the Upland Sandpiper, was performed by Ecological Solutions, LLC to determine whether there was any evidence of the existence of the Upland Sandpiper, whether suitable Upland Sandpiper is present on the site and if habitat exists, to assess the potential impacts of the redevelopment on the Upland Sandpiper ("Upland Sandpiper Habitat Assessment Study").

f. The Upland Sandpiper Habitat Assessment Study yielded no evidence of the existence of the Upland Sandpiper and no evidence of nests on the site. Therefore the proposed overall redevelopment plan will not result in any loss of habitat and have no adverse impacts on vegetation and wildlife, including the Upland Sandpiper.

g. Construction and operation of the overall redevelopment plan will not have a significant adverse impact to fish and wildlife. No unique habitats or rare, threatened or endangered species have been identified at this Site. There are no anticipated significant adverse impacts on vegetation and wildlife, including but not limited to the Upland Sandpiper, as a result of the overall redevelopment plan.

13. SECONDARY AND CUMULATIVE IMPACTS

a. Section 4.0 of the DEIS evaluates the potential secondary and cumulative (growth inducing) impacts of the overall redevelopment plan.

b. The Planning Board has carefully considered the secondary and cumulative impacts of the overall redevelopment plan such as construction employment opportunities and non-construction employment. Town and County residents may fill these job opportunities. If the overall redevelopment plan causes an increase in population, it is expected that such increase will be in areas that are properly zoned, possess adequate infrastructure capacity and is not an adverse impact.

c. A potential increase in population growth in the Town is not anticipated to be significant or concentrated, given that the region is already developed/populated. It is expected that any increase in population will be consistent with local land use and is not an adverse impact.

d. The overall redevelopment plan is not opening up new lands for development in the Town or surrounding areas. The overall redevelopment plan is not increasing or extending the reach of utilities and other public services beyond the site. It is redeveloping a previously developed site, and in doing so upgrading the uses therein, and using the land more efficiently.

e. Potential ancillary new business growth is possible, but it is not anticipated to constitute an adverse impact.

f. All induced growth is anticipated to be consistent with applicable local zoning and community's comprehensive planning efforts, and will be subject to any required environmental reviews in accordance with SEQRA. Thus, overall redevelopment project induced growth is not anticipated to have any significant adverse impact.

V. ALTERNATIVES

a. The FEIS contains a thorough and meaningful analysis of possible reasonable alternatives to the overall redevelopment plan, taking into consideration the objectives and capabilities of the Applicant.

b. Identified reasonable alternatives have been examined at a level of detail sufficient to allow a comparative assessment of their impacts.

c. The alternatives considered demonstrate the flexible nature of the redevelopment plan while achieving the goals set forth by the transfer of property. Analysis of various size redevelopment plans using the same uses studied in this DEIS, but varying the composite of uses demonstrates that uses which create more demand on specific resources (i.e. hotel demand on water is greater than office demand on water or traffic related to retail is greater than traffic related to corporate housing) will identify the maximum demand possible. Using the identified maximum demand values in comparison to the studied values highlights the ability of the redevelopment plan to be flexible and reactive to market demand within the range of impacts being considered.

d. Several redevelopment concepts were considered. The concepts were developed in consideration of marketability, environmental impact and mitigation thresholds. The analysis was sufficient to allow the evaluation of the impacts and highlight the possibilities of varying size redevelopment with varying concentration of uses. The alternatives developed and analyzed assume that the developed area of the STAS lands remains constant and that increased building square footage and increased parking is a function of additional building stories and integration of structured parking.

e. The redevelopment alternatives include: No Action; 2.5 million s.f. of development using four redevelopment land-use scenarios; and 1.5 million s.f. of development using three redevelopment land-use scenarios.

f. The no action alternative would eliminate the potential for adverse environmental impacts. However, it would eliminate the economic and other benefits for the Town. Moreover, the no action alternative is contrary to obligations set forth in the ground lease and would not meet the Town's goal of economic development.

g. The 2.5 million square foot alternative assumed a mix of varying height buildings. The four redevelopment scenarios were analyzed to establish a range of potential impacts from a redevelopment plan of this size. Transportation, water supply and treatment and wastewater collection and treatment were identified as potential impacts. Based on this alternative, the existing water and wastewater facilities can accommodate a redevelopment plan of this size. Additional mitigation measures relative to transportation may be required, however, it is anticipated that these measures would not be cost prohibitive in nature.

h. The 1.5 million square foot alternative assumed that the redevelopment would consist of lower story type structures. Three redevelopment scenarios were analyzed to determine the range of potential impacts. Transportation, water supply and treatment and wastewater collection and treatment were identified as potential impacts. Although a redevelopment of this size may be accommodated by the existing facilities and meet the Presidential goal of the land transfer, a redevelopment plan of this size would only be contemplated if market demand remains weak over an extended period of time.

i. The alternatives considered demonstrate that the redevelopment plan can be flexible while achieving the goals set forth in the ground lease.

VI. MITIGATIVE MEASURES

In order to minimize, to the extent practicable, potential adverse environmental effects identified herein, the following mitigation measures, or other measures which would provide the same or substantively similar mitigative effects, are hereby established and are to be implemented in connection with individual redevelopment projects:

1. Phase II Stormwater Runoff Discharges from Construction Activities permit from NYSDEC will be obtained as applicable. Temporary erosion control measures, as required by the NYSDEC and/ or sound construction practices, that may be implemented include protecting the inlets to and diverting runoff to temporary sediment basins and temporary sediment traps prior to discharge, installation of sediment basins and traps at the beginning of the construction process, and installation of silt fence and hay bale barriers at the toe of all embankments along long slopes to minimize channeling and inlet protection to all existing and proposed drainage structures

2. During construction, contractors will be required to implement dust control measures for each individual site and will include, as appropriate, the following measures:

   - Placement of any removed topsoil into a topsoil storage area and seeded with quick cover vegetation to prevent erosion.
   - Watering all exposed soil and rapidly stabilizing the re-graded areas with topsoil, loam and/or seeding.
   - Rinsing and/or wetting of the roadways with water as needed.
   - Maintenance of a maximum on-site speed limit of 15 mph to minimize pulverization and lifting of surface soil in the air-current wake of heavy equipment.

3. Existing buildings and structures will be investigated for the presence of asbestos in connection with demolition and/or renovation activities. To the extent asbestos is identified, such asbestos will be managed in accordance with applicable state and/or federal requirements.

4. The following measures are to be implemented in connection with site clearing activities:
   - Areas to be relandscaped after construction disturbance will be soil scarified and aerated prior to hydro seeding to manage the effects of soil compaction and to facilitate seed germination.
   - Physical barriers, such as snow fencing will be erected along the tree's drip line near construction activities.
   - Trunk and root systems of trees are to remain at individual sites.
   - Landscape plans will, wherever practicable, reflect species that are compatible with native vegetation found on the site.

5. If regulated wetland disturbance is proposed that requires notification to the ACOE, any required ACOE permitting and NYSDEC certification must be obtained.

6. Contractors will be required, in performing construction work, to comply with applicable Town noise requirements.

7. Existing overhead utility lines will be relocated as development progresses into a below ground manhole conduit system, as necessary.

8. Streetlights and street trees will be installed along dedicated town roads.

9. The Applicant shall require that individual project developments comply, as

appropriate, with design guidelines, described in Section 1.5 of the DEIS.

10. Water Supply and Treatment - Fire flow pressure enhancing devices or system improvements must be installed, as appropriate. Enhancements may be in the form of individual building booster pumps, other improvements to the distribution system, or otherwise, as determined by the Applicant. Distribution pipe sizes may be increased or other measures implemented to improve fire flow conditions. Any such improvements may be performed by the water district and all related costs of such improvements will be assessed against benefited properties.

11. Wastewater Collection and Treatment - To the extent necessary any existing I & I problems may be improved by repairing or replacing the existing sanitary sewer facilities (piping and manholes) or other measures within the STAS lands. Field investigation and monitoring must be performed, as necessary, to identify portions of the facilities which require any such measures. Any such work may be performed by the sewer district, in which case all related costs of such improvements will be assessed against benefited properties.

12. Transportation improvements to accommodate the projected traffic generated by the overall redevelopment include the following:

- *Route 207 at Route 300 (westerly junction)* – Increase traffic signal cycle lengths for both the morning and afternoon peak hours and modify signal timings. It is anticipated that these improvements will be implemented immediately as the redevelopment initially proceeds.

- *International Boulevard/Connector Road at World Trade Way* – Widen along the southerly side of the east-west Connector Road to provide an exclusive eastbound right turn lane. Re-stripe the northbound Airport Center Drive approach to provide an exclusive left turn lane and a shared left/through/right turn lane. Widen the northerly side of the Connector Road to provide the proper acceptance width for the dual left turn movement. The improvements required for the dual left-turn-only lane are anticipated to be needed after approximately 70% (1,735,000 SF) of the redevelopment is complete.

- *International Boulevard at Aviation Avenue (formerly 4th Street)* – Re-stripe the Aviation Avenue northbound approach to provide a left turn lane and a shared left/through/right turn lane. Widen the northerly side of the International Boulevard west of Aviation Avenue for the dual left turn movement. The improvements required for the dual left-turn-only lane are anticipated to be needed after approximately 80% (approximately 2,012,000 SF) of the redevelopment is complete.

- *Airport Center Drive (formerly D Street) at Aviation Avenue (formerly 4th Street)/Hudson Valley Avenue (formerly Aviation Avenue* – Reconstruct the northeasterly corner of the intersection to provide a canalized right turn lane. Modify the traffic control by removing the existing stop signs from the Hudson Valley Avenue and Aviation Avenue approaches and installing stop signs on the World Trade Way approaches. The improvements required for the channelized right-turn-only lane are anticipated to be needed after approximately 90% (2,264,000 SF) of the redevelopment is complete.

- *Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue* – Modify the traffic control to provide stop signs on both the Bill Larkin Drive and Tozzoli Avenue approaches. These improvements are anticipated to be required upon completion of the Stewart Airport and I-84 Connection.

13. All blasting operations, if any, will adhere to New York State regulations governing the use of explosives (see 12 NYCRR 39 and Industrial Code Rule 53). Additionally, the detailed procedures identified in Section 3.3.2 of the DEIS will be followed, to the extent practicable.

14. Applicants for site plan approval and/or subdivision approval for individual projects must complete and submit, with their application, a "New York International Plaza Individual Project Checklist" in the form attached hereto.

HOST MUNICIPALITY AGREEMENT

This **HOST MUNICIPALITY AGREEMENT** (the "Agreement") is by and between the **TOWN OF NEW WINDSOR**, a New York municipality with a business and mailing address of 555 Union Street, New Windsor, New York 12553 (the "Town"), and **GREENETRACK, INC.** an Alabama corporation with a business address c/o 677 Broadway, Albany, New York 12205 ("Greenetrack"), dated as of April __, 2014. (Hereinafter, the Town and Greenetrack may be referred to together as the "Parties" and individually as a "Party.")

This Agreement shall be effective upon the date of a favorable vote by the Town's Board of Trustees ratifying the execution of this Agreement (the "Effective Date").

RECITALS

1. Greenetrack has proposed to option and to lease certain parcels of land containing approximately 140 acres located at Stewart Airport, New Windsor, New York owned by the Town as more specifically described in Schedule "A" attached hereto (the "Property"). Current assessment for the Property for real estate tax purposes is approximately _____ ($_____) per year.

2. The New York State Legislature enacted the Upstate New York Gaming Economic Development Act of 2013 (the "Act") pursuant to which the New York Gaming Commission (the "Gaming Commission") has issued a Request for Application ("RFA") for a license (a "Gaming License").

3. Greenetrack intends to submit an application for such Gaming License which will include the intent to develop and operate a resort gaming establishment and associated hotel, retail and entertainment facilities at the Property (the "Project").

4. The Town will be a Host Municipality for the Project as defined in the RFA. In anticipation of this relationship, Greenetrack has previously agreed to reimburse the reasonable costs incurred by the Town and its instrumentalities (i) in entering into this Agreementl and (ii) for the various studies prepared and reviewed in connection with the Project, and (iii) desires to continue to reimburse the Town and its instrumentalities for such reasonable costs as specified herein.

5. The Town and Greenetrack believe that the Project will bring economic development and employment opportunities for residents of the Town and the potential to stabilize the fiscal health of the Town and provide property tax relief. The Parties believe and acknowledge that the Project will have an impact on the Town's existing resources and municipal infrastructure and the Parties desire to mitigate and minimize such impacts through financial and other commitments as set forth in this Agreement.

6. This Agreement shall be known as the "Host Municipality Agreement" between Greenetrack and the Town.

7. Greenetrack, in consultation with the Town and its consulting team, has commissioned and made (or will make) publicly available studies of the potential traffic, sewer, water and socioeconomic impacts of the Project. The Town and its consulting team, in addition to legal counsel to the Town, have had the opportunity to review these studies which have resulted in amended and fully-reviewed studies (the "Studies") which the Parties have relied upon in the negotiation and preparation of this Agreement.

NOW THEREFORE, in consideration of the mutual promises set forth in this Agreement, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereto agree as follows:

SECTION 1. THE PROJECT

Greenetrack intends to submit its final application for a Gaming License pursuant to the RFA to construct and operate the Project on the Property on or before June 30, 2014. Upon award of the Gaming License, Greenetrack shall, at its expense, finalize the design of the Project and apply for remaining permits and approvals for construction of the Project. Greenetrack shall provide the Town with all schedules and plans as provided to the Gaming Commission in its final Gaming License application. Subject to the timely receipt of necessary approvals and the closing of third-party Financing, as defined below, Greenetrack expects the substantial completion and Opening of the Project, as defined below, to occur within 24 months from the date of the award of the Gaming License.

The Parties acknowledge that total investment in the Project and in Greenetrack's improvements to the Town and region's infrastructure is expected to be approximately [Three Hundred Fifty Million Dollars ($350,000,000)]. The Project shall consist of a destination resort and gaming facility with features such as, without limitation, the following:

1. Full-service resort casino with 3,000 slot machines and 75 table games in approximately 80,000 square feet.

2. Casual dining restaurants with up to ___ seats and two fine dining restaurant with up to ___ seats.

3. Quick-service multi-outlet food court.

4. Center bar and lounge with entertainment stage.

5. A _____ square foot resort casino hotel with approximately 350 rooms and suites, a gifts/sundries shop, fitness center, spa business center, a hotel ballroom and meeting rooms.

6. A _____ square foot International Conference Center (the "Brooks Internation Conference Center at Stewart Airpot").

7. Valet parking service in addition to structured, garage and surface parking.

8. A 140,000 square foot retail development featuring additional dining options, a cinema and other entertainment, fashion retail outlets and other retail stores.

The Project shall be constructed as generally shown on the conceptual plans attached hereto as Exhibit A (the "Plans"). Additional plans for the Project will be submitted to the Gaming Commission in connection with Greenetrack's Gaming License application and will be subject to final regulatory permits from State of New York and the Town along with other related approvals.

The Parties recognize and acknowledge that the final construction documents and plans for the Project will provide greater detail and may deviate somewhat from the Plans and the actual construction of the Project may result in additional changes or variations from the Plans. Nonetheless, Greenetrack shall develop the Project substantially in accordance with the Plans, and the Parties acknowledge that a material change in the Plans may trigger the provisions of Section II. D. below. Construction and operation of the Project shall be consistent in style and quality exhibited by other casino properties owned and operated by Greenetrack and its affiliates.

SECTION II. IMPACTS AND BENEFITS OF THE PROJECT

The Parties recognize that the Project will have many and varying impacts on, and benefits to, the Town and the Town's residents. The impacts of the Project will be both negative, in terms of increased demand on Town services and other potential costs, and positive in terms of new career and employment opportunities for Town residents and other direct and indirect benefits from sustained economic development and promotion of tourism. Some impacts of the Project are determinable and some are unknown.

A. Stipulations of Known Impacts

This Section II-A shall be deemed to be the "stipulations of known impacts" that are required to be included in this Agreement pursuant to the Act. The following impacts are categorized and referred to herein as "Known Impacts".

1. The Project is expected to increase the number of vehicles using the Town's publicways and increase the demands for services by the Town's Department of Public Works.

2. The Project may have an impact on the general law enforcement responsibilities of the Town. Although Greenetrack will employ a full-time, professional, trained, on-site security and surveillance staff at the Project and the New York State Police and the Gaming Commission will have staff, facilities and certain jurisdiction within the gaming establishment envisioned by the Project, the Town anticipates additional costs to provide police services to the Project and in other locations in the Town.

3. The Property is located entirety within the service district or territory of the New Windsor Fire District No. __ and No. ___ (the "Fire District"). The Project is not expected to

have an impact on fire protection services provided by the Fire District and its associated, supporting neighboring fire departments (through mutual aid agreements), including, but not limited to, equipment, staffing levels and training.

4. The Property is located entirely within the service district or territory of the New Windsor Water District No. __ (the "Water District"). [The Project is expected to have an impact on municipal water service provided by the Water District, including, but not limited to, available water capacity. These impacts will require additional expenditures by the Water District to adequately provide municipal water service to the Project and to maintain adequate services to other areas of the Town.]

5. The Project will have an impact on the ambulance service and Emergency Medical Services (EMS) currently available or provided in the Town.

6. The Project is expected to have an impact on municipal sewer services provided by the Town. The Project will require additional expenditures by the Town in order to provide such services to the Project and will impact the Town's ability to provide adequate or expanded sewer services to other areas of the Town.

7. The Project is expected to have an impact on other municipal services provided by the Town, including but not limited to municipal inspectional and permitting services. The Project will require additional expenditures by the Town in order to provide such services to the Project.

8. The Project will have an impact on the level of aid and grant funding to be received by the Town from the State of New York due to provisions of the Act, which provides that the Town and the Host County will receive 10% of total gaming revenue deposited into the General Fund.

B. Favorable Impacts Expected from Project

Based upon the Studies and Plans, it is anticipated that the development, construction and operation of the Project will include the following, Town-wide or public benefits:

1. Design and construction of municipal sewer line extensions/improvements;

2. Design and construction of municipal water service expansion/upgrades and additional revenue to the District from the sale of water to the Project;

3. Design and construction of public roadway improvements;

4. A significant expansion of the Town's property tax base and the District's tax base. Based upon the scale and scope of the Project, and based upon the Town's current real property tax rate, the Town estimates that expected tax revenue, in the event the PILOT Agreement, as provided below, is not approved, to be paid by Greenetrack to the Town for the first full year of use and occupancy of the Project would be approximately _____ Dollars ($_____). The estimated taxes to be paid to the District for the first full year of use and occupancy of the Project following Opening (as defined

below), in the absence of the PILOT Agreement, would be approximately _____ Thousand Dollars ($_____). In addition, the Town anticipates the Project will generate substantial sales taxes for the Town.

5. Expanded employment opportunities during construction of the Project;

6. Expanded, permanent, full and part-time employment opportunities to staff and operate the Project; and

7. Collateral development, employment and tax revenues in the Town based on increased spending by Greenetrack and its patrons, employees, suppliers and contractors for the Project in the Town.

C. Additional Unknown Impacts

The Parties acknowledge that there may be additional impacts associated with the Project that are unknown as of the Effective Date (the "Additional Impacts"). The Parties intend that any Additional Impacts of the Project that are not sufficiently mitigated through this Agreement shall be mitigated through the Gaming Commission's licensing process, through any other state or municipal permitting processes that may be necessary for the Project, including but not limited to, grants or other funds from gaming revenues allocated in accordance with this agreement.

D. Reopening of Agreement

1. Greenetrack and the Town shall, if reasonably necessary under the circumstances, negotiate in good faith an amendment to this Agreement if a triggering event occurs.

2. Notwithstanding the mitigation for Known Impacts as required herein, Greenetrack and the Town shall negotiate in good faith any amendments required to this Agreement (i) in the event the scope of the Project, as shown on the Plans, increases materially and results in a significant and material adverse impact, or (ii) the Town experiences material increases in public school enrollments or per person residency in existing housing in the Town related to or arising from the Project.

SECTION III. MITIGATION OBLIGATIONS OF GREENETRACK

A. Public Infrastructure Improvements to be Constructed by Greenetrack

To mitigate the impacts of the Project, Greenetrack shall directly invest in and improve the infrastructure systems of the Town (and, with some infrastructure improvements, neighboring communities) by contracting directly with engineers, builders and contractors to carry out upgrades and enhancements to existing systems serving the Town and District. These projects, funded and arranged by Greenetrack, in close conjunction with the Town, are described in the attached exhibits referenced in the subparagraphs below (including paragraph 1 regarding the District water system, paragraph 2 regarding municipal sewer system, and paragraphs 3 and 4 regarding improvements to roadways). All such projects shall be subject to reasonable

conditions of the Town or any other governmental agency with jurisdiction over such improvement. Greenetrack shall be directly responsible for or shall cause the sewer, roadway and water projects (such water projects being subject to separate agreement entered or to be entered between Greenetrack and the District; the "District Agreement") to be carried out and completed expeditiously and efficiently to enable the timely Opening of the gaming facility (as defined later herein). The Town agrees to cooperate in arranging for such improvements and obtaining all necessary permits therefore. If permitted by law and to the extent material, labor services and equipment to be used in connection with the development, construction and operation of such improvements are subject to sales and use or other similar tax, all such material, services and equipment may be acquired by Greenetrack or its designees on behalf of the Town for the public benefit using the tax exempt purchasing certificate or other direct purchasing authority of the Town.

1. Greenetrack shall, pursuant to the schedule of construction included in Greenetrack's Gaming License application, as the same may be modified pursuant to the award of the Gaming License, fund or assist in the arrangement of funding of the following improvements and enhancements to the various components of the public infrastructure serving the Town. Portions or components of these improvements are designed and recognized by the Parties as providing substantial public benefit. Greenetrack shall fund and complete the following improvements (collectively, the "Infrastructure Improvements").

(i) Expansion and improvements to the water distribution system of the District as described in "Exhibit B — Water Improvements," subject to and in accordance with the District Agreement. The total value of these improvements is estimated to be approximately _____ Dollars ($___,000). The Parties estimate that no less than _____ Dollars ($___,000) of these Infrastructure Improvement costs will have a direct public or Town-wide benefit.

(ii) Expansion and improvements to the Town's municipal sewer system, as described in "Exhibit C — Sewer Improvements." The total value of these improvements is estimated to be approximately _____Dollars ($_,_00,000). The Parties estimate that approximately _____ Dollars ($___,000) of these infrastructure improvement costs will have a direct public or Town-wide benefit.

(iii) Improvements to the Town's public streets and ways, as described in "Exhibit D — Roadway Improvements." The total value of these improvements is estimated to be no less than _____ Dollars ($_000). The Parties estimate that substantially all of these infrastructure improvement costs will have a direct public or Town-wide benefit.

2. Greenetrack shall use reasonable efforts to complete construction of the Infrastructure Improvements within three (3) years of the date of issuance of the Category 1 license for the Project.

3. Greenetrack shall pay to complete the Infrastructure Improvements, notwithstanding the fact that the actual costs to complete said work may be more (or less) than the estimated costs listed above and without any adjustment or reduction in the Municipality Impact Fee (as defined in Section below) to be paid by Greenetrack.

4. Upon completion of the Infrastructure Improvements, Greenetrack shall provide the Town with as-built plans of the sewer improvements. Such as-built plans shall be in the form and format reasonably required by the Town.

5. The Parties acknowledge that, pursuant to the Act, a condition to the award of the Gaming License will be the deposit of ten percent (10%) of the total investment proposed in Greenetrack's application into an interest-bearing account to be held in escrow until the final stage of construction, as detailed in Greenetrack's timeline of construction. It is the intent of the Parties not to duplicate any such bond or requirement to ensure construction of the Project, as planned.

6. The Town agrees that, upon receipt of any completed local applications in accordance with the Town's standard practices and subject to the Town's governmental discretion, it shall grant to Greenetrack and Greenetrack's contractors such access to the Town's land and other rights of way necessary to complete the Project improvements. The Town agrees further that it shall cooperate in the permitting and timing of all highway, road, water, sewer, construction activities related to these improvements and the Project. In addition, to the extent the power of eminent domain may be required, the Town agrees to consider the use of such authority in good faith and in furtherance of the infrastructure improvements that will serve or provide a public purpose.

B. Intentionally omitted.

C. Payment in Lieu of Taxes:

Section 3. DISTRIBUTION OF MUNICIPALITY IMPACT FEE

Pursuant to the Studies concerning the Known Impacts, the Town intends to apply and apportion the [Municipality Impact Fee] to mitigate the impacts of the Project upon various departments of the Town and upon other providers of municipal services in the Town (the "Departmental Mitigation Program"), the Town may also apply portions of the Municipality Impact Fee to mitigate the impacts of the Project upon the general Municipality of the Town (the "Municipality Mitigation Program").

[A representative chart, showing the proposed, initial distribution of the payments received by the Town as the Municipality Impact Fee is attached as Exhibit F. While the Town shall have no obligation to appropriate and spend the Municipality Impact Fee payments as specifically set forth in this Agreement, the Town shall apply the payments to mitigate the impacts of the Project and, in any event, shall only apply and appropriate such payments for valid municipal purposes. The expenditure of the payments received will enhance the level of municipal services to be provided by the Town and the District, for the benefit and protection of the general public, including but not limited to the Project, its employees, patrons and visitors.

B. Departmental Mitigation Program

1. Police Services

From the Mitigation Payment, the Town may apply a sum not to exceed _____ to enable the Town to expand its Police Department by hiring additional officers, dispatchers and to purchase cruisers. This payment includes funds for training, equipment or any other ancillary costs the Town may identify.

From the Mitigation Payment, the Town may apply a sum not to exceed _____, to enable the Town to obtain necessary equipment for the expansion of the Police Department and for the purpose of providing training to existing members of the Police Department.

2. Fire Services

Intentionally omitted.

3. Ambulance/E.M.S. Services

From the Mitigation Payment, the Town may apply a sum not to exceed_____, to enable the Town to pay over said sums to the Town's non-profit, charitable ambulance service provider, for the purpose of expanding by a two-person, EMT crew and to staff and maintain an additional, properly equipped ambulance.

From the Mitigation Payment, the Town may apply a sum not to exceed _____, to enable the Town to pay over said sum to the Town's non-profit, ambulance service provider to procure and equip an additional ambulance and to complete the renovation and expansion of the garage housing the ambulances.

4. Department of Public Works

From the Mitigation Payment, the Town may apply a sum not to exceed Two Hundred, Twenty-Five Thousand Dollars ($225,000), to enable the Town to expand its Public Works Department by hiring and retaining additional staff/laborers. This payment sum includes funds for training, equipment or any other ancillary costs the Town may identify.

5. Intentionally omitted..

6. Inspectional Services

From the Mitigation Payment, the Town may apply a sum not to exceed _____, to enable the Town to hire and retain an additional, full-time _____-.

7. Permit Fees and Availability of Permits and Licenses

[Greenetrack recognizes that the Town does not employ sufficient staff to conduct necessary reviews of plans and applications for building permits for developments of the size and scope of the Project. The Town will be required to retain outside consultants and/or temporary specialized staff for this purpose, and that permanent staff will be required to expend time and resources in retaining, supervising and administering such consultants and temporary staff. Greenetrack agrees to pay the reasonable costs actually incurred by the Town in retaining such outside consultants and temporary special employees after application of a credit for all permit and license fees paid to the Town according to the Town's regular schedule for such fees. The Town shall prepare and submit to Greenetrack a budget(s) for all such reasonable costs for which the Town will seek payment or reimbursement hereunder and include Greenetrack in the pre-qualification and selection process for such consultants or staff by providing any proposal, contract and scope of work for such consultants or staff to Greenetrack in advance. Such budget(s) and selection process shall be subject to Greenetrack's review and approval and which approval shall not be unreasonably withheld or delayed. Any costs not included in the approved budget(s) shall require the separate prior approval of Greenetrack. With regard to employed staff, Greenetrack shall be responsible for direct employment costs during the term of employment only for the time such personnel actually spends attending to matters related to the Project. The Town will provide Greenetrack with documentation of the costs for which it seeks reimbursement.]

C. Municipality Mitigation Program

SECTION IV. OTHER OBLIGATIONS OF GREENETRACK

A. Employment

Greenetrack shall work in a good faith, legal and non-discriminatory manner to ensure that qualified Town residents have opportunities in contracting, subcontracting and servicing opportunities in the development, construction and operation of the gaming facility.

1. Construction Employment. Greenetrack intends for the Project to be built pursuant to a Project Labor Agreement with opportunities for local residents to participate as subcontractors and employees.

2. Permanent Employment. Greenetrack has entered into a memorandum of understanding with a consortium of area Municipality colleges to assist in the development of training and workforce development initiatives to help ensure that new permanent jobs are filled by local and area residents, and that the gaming facility will have a well-trained, diverse workforce with career opportunities for local residents of all ages and backgrounds.

3. Promotion of Employment Opportunities. Greenetrack shall work with the Town to hold jobs fairs to promote employment opportunities at the Project and shall work with the Town to enhance Greenetrack's recruitment partners. Greenetrack shall work with the Town and other communities in the vicinity of the Project to encourage expansion of access to employment for minorities, women and veterans and other disadvantaged groups and generally to expand local employment opportunities. Greenetrack shall establish a protocol which shall be submitted

to the Town ly to define and assess these employment and other opportunities for Town residents. Before such events are held in any other communities, Greenetrack shall conduct job fairs in the Town for both the construction and pre-opening phase of the Project.

4. Promotion of Business Opportunities for Local Vendors/Contractors. Greenetrack shall work with the Town to hold vendor fairs to promote the opportunities for contracts with the Project for both the construction and pre-opening phase of the Project.

B. Local and Regional Marketing Program

Greenetrack shall encourage local businesses to participate in the "Greenetrack New York Player's Club Card program" which, subject to Gaming Commission approval, will enable guests to receive additional discount and redemption opportunities at participating local businesses and destinations in the Hudson Valley of New York.

Greenetrack shall also encourage local businesses to participate in joint promotional opportunities, such as the inclusion of participating businesses in Greenetrack New York advertising campaigns, and employee discount programs.

C. Ongoing Municipality Mitigation

1. Greenetrack shall work with the Town to establish a "Business Municipality Advisory Board". Greenetrack shall work with the Business Municipality Advisory Board to develop mechanisms and networks for the inclusion of local vendors, with special emphasis on women, minority and veteran-owned enterprises in accordance with the Act, and to provide goods, services and materials for the Project on an on-going basis in accordance with the Act, all in coordination with Greenetrack's obligations under this Agreement.

2. Greenetrack shall cooperate in the study and/or preparation of any health impact assessments relative to the health impacts associated with or attributed to the Project. Greenetrack shall not be responsible for funding such a study or impact assessment but shall consult with the Health Impact Assessment Study tem. In addition, Greenetrack will accomplish responsible gambling goals by: (1) educating its employees and providing information to patrons about the odds of games and how to make responsible gaming decisions; (2) promoting responsible gaming in daily operations; and (3) supporting public awareness of responsible gaming.

D. Expansion

If Greenetrack seeks to expand its gaming establishment materially beyond what is shown on the Plans, Greenetrack shall promptly notify the Town and the Parties shall negotiate in good faith an amendment to this Agreement to mitigate any impacts of such expansion.

E. Reimbursement of Town's Costs

1. Greenetrack shall, within thirty (30) days of receipt of a proper invoice, directly reimburse the Town for all reasonable costs incurred for outside consultants, legal counsel, and other similar and reasonable costs necessary in connection with the implementation of this

Agreement by the Town relating to the following: (i) reviewing the Studies; (ii) negotiating preparing and entering a PILOT Agreement and/or preparing and seeking special legislation in lieu of a PILOT Agreement and the subsequent, alternative agreement (if any); (iii) expenses agreed to by the Parties pursuant to Section IV. A. 7 of this Agreement; and (iv) reasonable costs, including fees for engineering consultant services, related to or arising from the improvements identified in Section III A.1. (ii) and (iii). Such obligations to reimburse shall survive termination of this Agreement to the extent of previously approved expenses which have been incurred by the Town through the date of Termination. The Town shall not, however, seek reimbursement from Greenetrack for any such costs for which it has received reimbursement from the Gaming Commission.

2. The Town shall promptly submit to Greenetrack copies of invoices and statements from its outside consultants and legal counsel ("Invoice Materials") in order to substantiate any and all reimbursable costs authorized hereunder; provided, however, that any Invoice Materials supplied pursuant to this, or any other, section of this Agreement, may provide limited descriptions of services performed and/or redactions in order to protect privileged or confidential information, including information covered by the attorney-client privilege.

3. Exclusive of the implementation costs described in paragraph 1 above, the Town shall be responsible for its own costs and expenses following payment of the first Mitigation Payment.

F. Indemnification

As of the Effective Date, Greenetrack shall defend, indemnify and hold harmless the Town, its officials, officers, employees and agents ("Indemnified Party or Parties") from and against all claims, actions, demands, fines, penalties, costs, expenses, damages, losses, obligations, judgments, liabilities, and suits, including reasonable attorneys' fees, reasonable experts' fees and associated court costs which arise from or relate in any way to any negligent act or omission by Greenetrack and/or its employees in fulfillment of Greenetrack's obligations under this Agreement. If any action or proceeding is brought against the Indemnified Parties arising out of any occurrence described in this Section, upon notice from the Indemnified Party or Parties, Greenetrack shall, at its expense, defend such action or proceeding using legal counsel approved by the Indemnified Party or Parties, provided that no such action or proceeding shall be settled without the approval of the Indemnified Party or Parties. This paragraph shall survive the expiration or sooner termination of this Agreement for a period equal to the applicable statute of limitations.

Greenetrack shall be responsible, at all times, for maintaining insurance, in amounts and from carriers reasonably acceptable to the Town, for all construction projects pursuant to this Agreement, and to name the Town and/or its instrumentalities as additional insureds on such policies, as reasonably requested by the Town.

G. Representations, Warranties and Covenants of Greenetrack

Greenetrack represents, warrants and covenants to the Town that each of the following statements is true and accurate as of the Effective Date:

1. Greenetrack is duly organized, validly existing and in good standing under the laws of the State of Alabama and is qualified to do business in the Commonwealth of New York.

2. Greenetrack has an option to enter into a long-term lease of the Property, enter into and perform its obligations under this Agreement, apply for and obtain a Gaming License and to carry out the Project.

3. Upon receipt of the Gaming License, Greenetrack will hold such license, and it will not be transferred or held by any third party or affiliate of Greenetrack, except in compliance with Section VI (b) and (c). Except as otherwise set forth in this Agreement, Greenetrack covenants and agrees not to transfer the Gaming License to any third party without requiring such third party to assume all of the remaining obligations of Greenetrack under this Agreement.

4. Greenetrack is not a party to any agreement, document or instrument that will have an adverse effect on the ability of Greenetrack to carry out its obligations under this Agreement Greenetrack is not and will not become a guarantor of any debt of its parent company or any direct or indirect owner of its parent company, including, but not limited to the Mohegan Tribal Gaming Authority. Greenetrack will seek Financing to ensure that its debt-to-equity ratio conforms with any standard set by the Gaming Commission pursuant to the Act.

5. The execution of this Agreement and full compliance with the provisions of this Agreement shall not cause Greenetrack to be in violation of any laws or government regulations, its organizational documents or any agreement to which it is a party.

6. This Agreement constitutes the legal, valid and binding obligation of Greenetrack,, and is enforceable against Greenetrack in accordance with its terms.

7. Greenetrack has, or by assignment will have, a valid leasehold interest in the Property and has no knowledge of any facts or any past, present or threatened occurrence that could preclude or impair Greenetrack's ability to maintain its valid leasehold interest in the Property as required under the Act.

8. Greenetrack has disclosed in writing to the Town all litigation matters that Greenetrack is aware of that are likely or have the potential to challenge Greenetrack's rights and/or authority to carry out any of Greenetrack's obligations under this Agreement.

H. Statutory Basis for Fees

The Town will be entitled to the distribution of gaming revenue from the Project as set forth from time to time in the Act. The obligation to make such payments is set forth in the Act. The Town acknowledges and agrees that Greenetrack has no obligation to make such revenue payments to the Town. .

I. Intentionally omitted.

J. Construction Management Plan

Prior to commencing construction activities associated with the Project, Greenetrack shall provide a construction management plan to the Town to address and mitigate impacts on the Town's residents and businesses resulting from construction activity at the Project. The construction management plan shall include, but not be limited to: (i) terms concerning hours of construction activity; (ii) prohibiting or limiting truck traffic on certain roadways; (iii) requirements for the installation and maintenance of "tire scrubbers" at the Project site; and (iv) requirements for public safety and site security.

SECTION V. GENERAL PROVISIONS

A. Cooperation of the Town

The Parties acknowledge the provisions of the Act regarding the permitting of the Project by the State. In the event the State elects not to issue such permits, the Town shall reasonably cooperate with filing a permit requests and the issuance of required permits for the Project. In addition, recognizing that Greenetrack's ability to obtain necessary permits and licenses in a timely fashion and to maintain such permits and licenses will be critical in the award of the Gaming License to Greenetrack and to derive the economic benefits to the State and the many benefits to the Town as Host Municipality, the Town agrees to appoint or designate a "Resort Liaison" to act as the single point of contact for interaction on all Project-related matters with Greenetrack, and to otherwise make available senior staff of the Town and work with Greenetrack and its designated partners, suppliers, tenants and contractors to help ensure the timely receipt and successful maintenance of all permits and licenses necessary for the Project, pursuant to the Plans and such other permits and licenses which Greenetrack may deem advisable in its discretion, to cooperate with Greenetrack on the coordination of its discussions and negotiations with any surrounding municipality (as defined in the RFA or the Act), State and County agencies, the Gaming Commission, and such other agencies with jurisdiction over any aspect of the Project. The Town will consider Greenetrack's application for a smoking room as permitted by law. Furthermore, the Town agrees to pursue regional and local opportunities to improve public transportation and the ability for patrons and employees to travel to the Property by bus, rail, ride-sharing or intermodal means of transportation.

B. Recitals

The Recitals set forth above are incorporated herein by reference as though fully set forth herein.

C. Binding Agreement

This Agreement is binding upon and enforceable against, and inures to the benefit of, the Parties hereto and their successors and assigns, including, without limitation, any subsequent holder of the Gaming License or any successor owner or owners of the Project, but excluding mortgagees of the Project or those claiming through mortgagees of the Project, unless said mortgagee (or those claiming through such mortgagee) obtains title to the Property and proceeds with the development or operation of a gaming establishment on the Property.

D. Transfer of Interests

Greenetrack shall continually have the right to grant a mortgage or mortgages on all or any portion of the Property, or its interest therein, including a leasehold mortgage, and to transfer its interest herein or make a collateral assignment to any such mortgagee, to the purchaser at a foreclosure sale or otherwise in connection with the exercise of remedies under any such mortgage. In addition., Greenetrack shall have the right to transfer or assign its rights and interests under this Agreement, provided that:

1. at the time of such transfer or assignment, Greenetrack has made all payments then due and payable under this Agreement;

2. if a Gaming License has been issued for the Project, the transfer or assignment is in connection with a transfer or assignment of such Gaming License to the named assignee and such transfer or assignment has been approved pursuant to the Act;

3. the assignee shall assume and be subject to all of the covenants and obligations of Greenetrack under this Agreement, including any obligations arising or due prior to the date of such assignment; and

4. Greenetrack shall deliver to the Town prior to or promptly after such transfer or assignment, a copy of the instrument or instruments evidencing any such assignment to and assumption by the successor or assignee.

E. Priority of Payments

In connection with third-party financing of the Project or any other improvement, public or private, undertaken pursuant to this Agreement (individually or collectively, "Financing"), Greenetrack shall ensure that the payment of any taxes, PILOT Payment or other payments due under this Agreement have a high priority of payment from available cash flow and net gaming revenue.

F. Notices

All notices and other communications required or permitted under this Agreement shall be in writing, signed by a duly authorized officer or representative of the Town or Greenetrack, as the case maybe, and shall be (i) delivered by nationally recognized overnight delivery service, or (ii) mailed by certified or registered mail, return receipt requested, postage prepaid, to the Parties at the following addresses:

Town: Town Supervisor
Town of New Windsor
555 Union Street
New Windsor, New York 12553
Attention:

with copies to:

And

Greenetrack: Greenetrack,, Inc.
c/o
677Broadway
Albany, New York 12205
Attention: President & CEO

with copies to:

And

Any such notice shall be deemed to have been given on the date received or refused during normal business hours. Either party may, at any time, or from time to time, notify the other party named herein in writing of a substitute address for notice, and thereafter notices shall be directed to such substitute address.

G. Severability

If any term or provision of this Agreement, or the application thereof to any person or circumstance, shall to any extent be determined to be invalid or unenforceable, the remainder of this Agreement, or the application of such terms to persons or circumstances other than those to which it is invalid or unenforceable, shall not be affected thereby, and each term and provision of this Agreement shall be valid and shall be enforced to the extent permitted by law; provided,

however, that the Town shall have the right to seek special legislation in order to validate any term or provision of this Agreement.

H. Non Action Not a Waiver

The failure of the Town or Greenetrack to promptly insist upon strict performance of any provision of this Agreement shall not be deemed a waiver of any right or remedy that the Town or Greenetrack may have, and shall not be deemed a waiver of a subsequent default or nonperformance of such provision.

I. No Joint Venture

The Parties agree that nothing contained in this Agreement is intended or shall be construed to establish the Town and Greenetrack as joint venturers or partners.

J. No Third Party Beneficiaries

There are no third party beneficiaries with respect to this Agreement

K. Intentionally omitted.

L. Force Majeure

An event of "Force Majeure" shall mean the following events or circumstances, to the extent that they delay or otherwise adversely affect the performance beyond the reasonable control of Greenetrack, or its agents and contractors, of their duties and obligations under this Agreement:

1. Strikes, lockouts, labor disputes, inability to procure materials attributable to market-wide shortages, failure of utilities, labor shortages or explosions;

2. Acts of God, tornadoes, hurricanes, floods, sinkholes, fires and other casualties and natural disasters;

3. Acts of a public enemy, acts of war, terrorism, civil disturbances, or national or international calamities;

4. Concealed and unknown conditions of an unusual nature that are encountered below ground or in an existing structure;

5. Any temporary restraining order, preliminary injunction or permanent injunction, or mandamus or similar order, or any litigation or administrative delay which impedes the ability of the Project or Infrastructure Improvements to be completed, unless based in whole or in part on the actions or failure to act of Greenetrack; or

6. The failure by, or unreasonable delay of, the Town or the Commonwealth of New York or any subdivision, agency or other government body to issue any permits or approvals necessary for the development, construction, Opening or operation of the Project unless such

failure or delay is based materially in whole or in part on the actions or failure to act of Greenetrack, or its agents and contractors.

M. Governing Law and Jurisdiction

This Agreement shall be governed and construed by the laws of the State of New York, without regard to conflict of law principles. Any dispute arising under or in connection with this Agreement, if not subject to arbitration in accordance with Paragraph R, below, shall be within the exclusive jurisdiction of the New York Supreme Court for Orange County or the Federal District Court for the Northern District of New York, as appropriate.

N. Amendments

This Agreement may be amended only by a written instrument signed by the Parties.

O. Term and Termination

The term of this Agreement shall commence on the Effective Date and expire on the earlier of (a) the expiration or earlier termination of the Gaming License with respect to the Project, as the same may be extended or renewed; (b) the date on which Greenetrack notifies the Town that Greenetrack has been rejected or has withdrawn as an applicant by the Gaming Commission during any phase of the Gaming Commission's licensing process, with any appeals having been decided against Greenetrack and/or all appeal periods applicable to the licensing process having expired; or (c) the date on which Greenetrack notifies the Town that an applicant other than Greenetrack has received a Gaming License.

P. Execution in Counterparts/Multiple Originals

This Agreement may be executed in counterparts. All such counterparts shall be deemed to be originals and together, shall constitute but one and the same instrument. The Parties have agreed to execute multiple original copies of this Agreement.

Q. Enforcement

It is the intention of the Parties that the provisions of this Agreement may be enforced only by the Parties hereto, and that no other person or persons shall be authorized to undertake any action to enforce any provisions hereof without the prior written consent of the Parties. Notwithstanding the preceding sentence, the Gaming Commission may enforce this Agreement to the extent that this Agreement may be a binding condition of Greenetrack's Gaming License.

R. Dispute Resolution

1. The Parties shall attempt in good faith to resolve any dispute arising out of or relating to this Agreement promptly by negotiation on a confidential basis between senior representatives who have authority to settle the controversy. Either Party may give the other Party written notice of any dispute, and within ten (10) business days after delivery of such notice, the senior representatives shall meet at a mutually acceptable time and place, and thereafter as often as they reasonably deem necessary, to attempt to resolve the dispute. No time bar defenses shall be available based upon the passage of time during any negotiation under this Subsection 1.

2. In the event that good faith negotiations as provided above in Subsection 1 do not resolve any dispute arising under Section II. D., paragraph 2; Section III. B.; Section IV.; and Section V. H., the calculation of Gross Gaming Revenue, or such other matters hereunder as the parties may mutually determine (hereafter a "Limited Arbitrable Dispute"), then such Limited Arbitrable Dispute shall be resolved through arbitration as provided below in Subsection 3.

3. {Arbitration Provision.]

4. In addition to monetary relief with respect to any Limited Arbitrable Dispute, the arbitrator may also make an award of equitable relief including a temporary, preliminary or permanent injunction, and the Parties further agree that the arbitrator is empowered to enforce any of the provisions in accordance with this Section VI. R.

[SIGNATURES FOLLOW ON NEXT PAGE]

IN WITNESS WHEREOF, the Parties hereto have caused this instrument to be executed on their behalf by their respective officers thereunto duly authorized as of the day and year first above written.

TOWN OF NEW WINDSOR	GREENETRACK INC.
_____	_____
Name: Town Supervisor Date:	Name: Mitchell G. Etess Title: Its Manager Date:

DRAFT

Exhibit A — Project Plans

DRAFT

Exhibit B - Water Improvements

DRAFT

Exhibit C - Sewer Improvements

DRAFT

Exhibit D - Roadway Improvements

Exhibit E — Illustrative Examples of the Mitigation and Mitation Payments

Exhibit F — Allocation of the Municipality Impact Fee

Ecological Solutions, LLC

Connecticut
1248 Southford Road
Southbury, CT 06488
Phone (203) 910-4716
ecolsol@aol.com

April 30, 2014

Amanda Williams
c/o Wendel Companies
140 John James Audubon Pkwy, Suite 201
Buffalo, NY 14228

Re: Federal Wetland Delineation
NYIP- 140 +- acres
Town of New Windsor, Orange County, New York

Dear Amanda:

Ecological Solutions, LLC completed a federal wetland delineation on the NYIP property in the Town of New Windsor on April 23, 2014. The wetland delineation was completed in accordance with the US Army Corps of Engineers (USACE) Wetlands Delineation Manual (January 1987), Routine Determination Method and recent Northcentral/Northeast supplement. I also reviewed the New York State Department of Environmental Conservation (NYSDEC) wetland map for the area. There is no NYSDEC regulated wetland on or in the vicinity of the site.

The site was assessed for Federal wetlands which are based upon the identification of the three mandatory criteria for wetland determination as outlined in the 1987 Federal Manual: and recent supplement which includes dominant hydrophytic vegetation, hydric soils, and evidence of wetland hydrology Five transects consisting of several sample points were walked. Dominant vegetation around each sample point was identified and its percent cover quantified. The site was checked in detail for the presence of wetland hydrologic indicators. Soil profiles were then observed and characterized at each point.

The detailed field investigation included:

1. Identification of vegetation species to determine whether there was a dominance of hydrophytic plants and areas containing transitional but primarily wetland-oriented species.
2. Determination of soil features for hydric (poorly and very poorly drained) natural soils.
3. Observation of site features displaying evidence of wetland hydrology based on the presence of inundated areas, apparent high seasonal water tables, and evidence of saturation within 12 inches of the surface (considered the root zone) during sufficient periods during the growing season to provide for anaerobic/hydric soil conditions.

Federal wetlands and waters of the US were delineated at the site based on the criteria listed above.

If you need any additional information, please contact me.

Sincerely,
ECOLOGICAL SOLUTIONS, LLC

Michael Nowicki
Biologist

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

AUG 14 2002

REPLY TO
ATTENTION OF:
Regulatory Branch

SUBJECT: Permit Application Number 2000-01399-YS
by First Columbia Properties

Michael Nowicki
Ecological Solutions, LLC.
1248 Southford Road
Southbury, Connecticut 06488

Dear Mr. Nowicki:

On October 2, 2000, the New York District Corps of Engineers received a request for a Department of the Army jurisdictional determination for the above referenced project. This request was made by Ecological Solutions, LLC, as consultant for First Columbia Properties. The site consists of approximately 260 acres, in the Hudson River Basin, located on New York State Route 207 in the Town of New Windsor, Orange County, New York. The proposed project would involve the construction of an industrial and commercial office park.

In the letter received on October 2, 2000, your office submitted a proposed delineation of the extent of waters of the United States within the subject property. A site inspection was conducted by a representative of this office on July 11, 2001, in which it was agreed that changes would be made to the delineation and that the modified delineation would be submitted to this office. On May 29, 2002, this office received the modified delineation.

Based on the material submitted and the observations of the representative of this office during the site visit, this site has been determined to contain jurisdictional waters of the United States based on: the presence of wetlands determined by the occurrence of hydrophytic vegetation, hydric soils and wetland hydrology according to criteria established in the 1987 "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1 that are either adjacent to or part of a tributary system; the presence of a defined water body (e.g. stream channel, lake, pond, river, etc.) which is part of a tributary system; and the fact that the location includes property below the ordinary high water mark, high tide line or mean high water mark of a water body as determined by known gage data or by the presence of physical markings including, but not limited to, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter or debris or other characteristics of the surrounding area.

These jurisdictional waters of the United States are shown on the drawings entitled "Federal Wetland Boundary Survey New York International Plaza Town of New Windsor Orange County, New York", Sheet Nos. WP, and WP-1 through WP-4, prepared by Ecological Solutions, LLC, dated February 15, 2001, and last revised May 14, 2002. These drawings indicate that there are five (5) principal wetland areas on the project site which are part of a tributary system, and are considered to be waters of the United States.

The first wetland (Wetland Area A) is associated with an intermittent stream, is located near the middle of the western property line, and is approximately 0.163 acres within the subject property. The second and third wetlands (Wetland Areas I and N) are located in the southeastern corner of the property and are a total of approximately 0.133 acres within the subject property. The fourth wetland (Wetland Area K) is associated with three intermittent streams, is located between Hudson Valley Avenue and Avenue of the Americas, and is approximately 0.100 acres within the subject property. The fifth wetland (Wetland Area L) is associated with a perennial stream, is located in the northwestern corner of the property, and is approximately 0.199 acres within the subject property. These wetlands are considered to be above the headwaters.

It should be noted that, in light of the recent U.S. Supreme Court decision (Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178, January 9, 2001), the remainder of the wetlands shown on the above referenced drawings (Wetland Areas C, D, E, E-1, F, G and H, J and M) do not meet the current criteria of waters of the United States under Section 404 of the Clean Water Act. The Court ruled that isolated, intrastate waters can no longer be considered waters of the United States, based solely upon their use by migratory birds.

This determination regarding the delineation shall be considered valid for a period of five years from the date of this letter. Enclosed is a Notification of Administrative Appeal Options which provides information on your acceptance of this approved jurisdictional determination.

This delineation/determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. This delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

It is strongly recommended that the development of the site be carried out in such a manner as to avoid as much as possible the discharge of dredged or fill material into the delineated waters of the United States. If the activities proposed for the site involve such discharges, authorization from this office may be necessary prior to the initiation of the proposed work. The extent of such discharge of fill will determine the level of authorization that would be required.

If any questions should arise concerning this matter, please contact Brian A. Orzel, of my staff, at (212) 264-0183.

Sincerely,

FOR George Nieves
Chief, Western Permits Section

Enclosure

cf: NYSDEC - Region 3
Town of New Windsor

BL Companies

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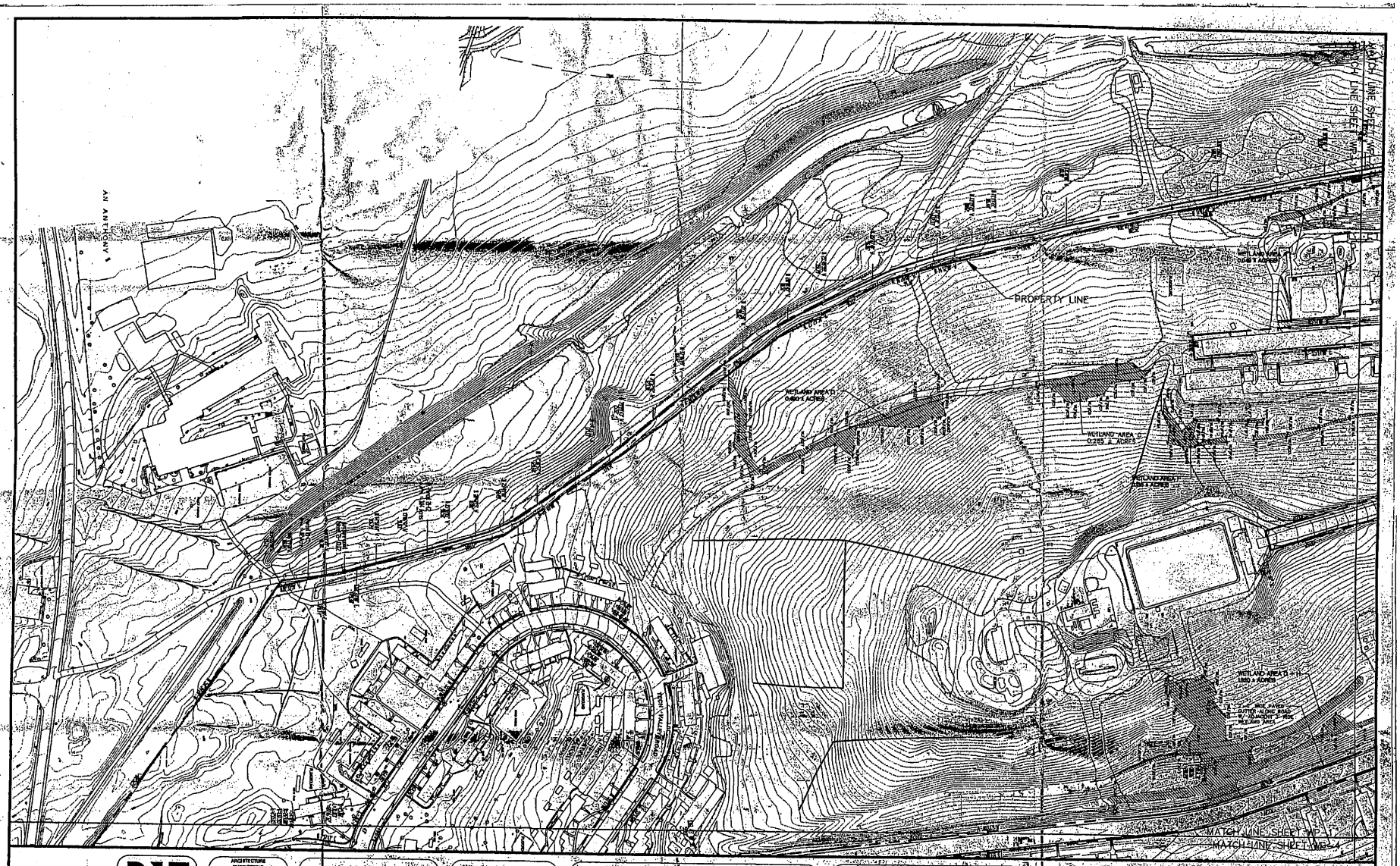
rev.	date	DESCRIPTION
4.	05/14/02	REVISED PER COMMENTS
3.	1/18/02	REVISED PER COMMENTS
2.	5/29/01	REVISED PER CLIENT COMMENTS
1.	3/15/01	REVISED PER ADDE LETTER

FEDERAL WETLAND BOUNDARY SURVEY
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR
ORANGE COUNTY, NEW YORK

drawn	checked
date 3/15/01	scale 1" = 200'
project no. 0152005	
sheet no. WP	



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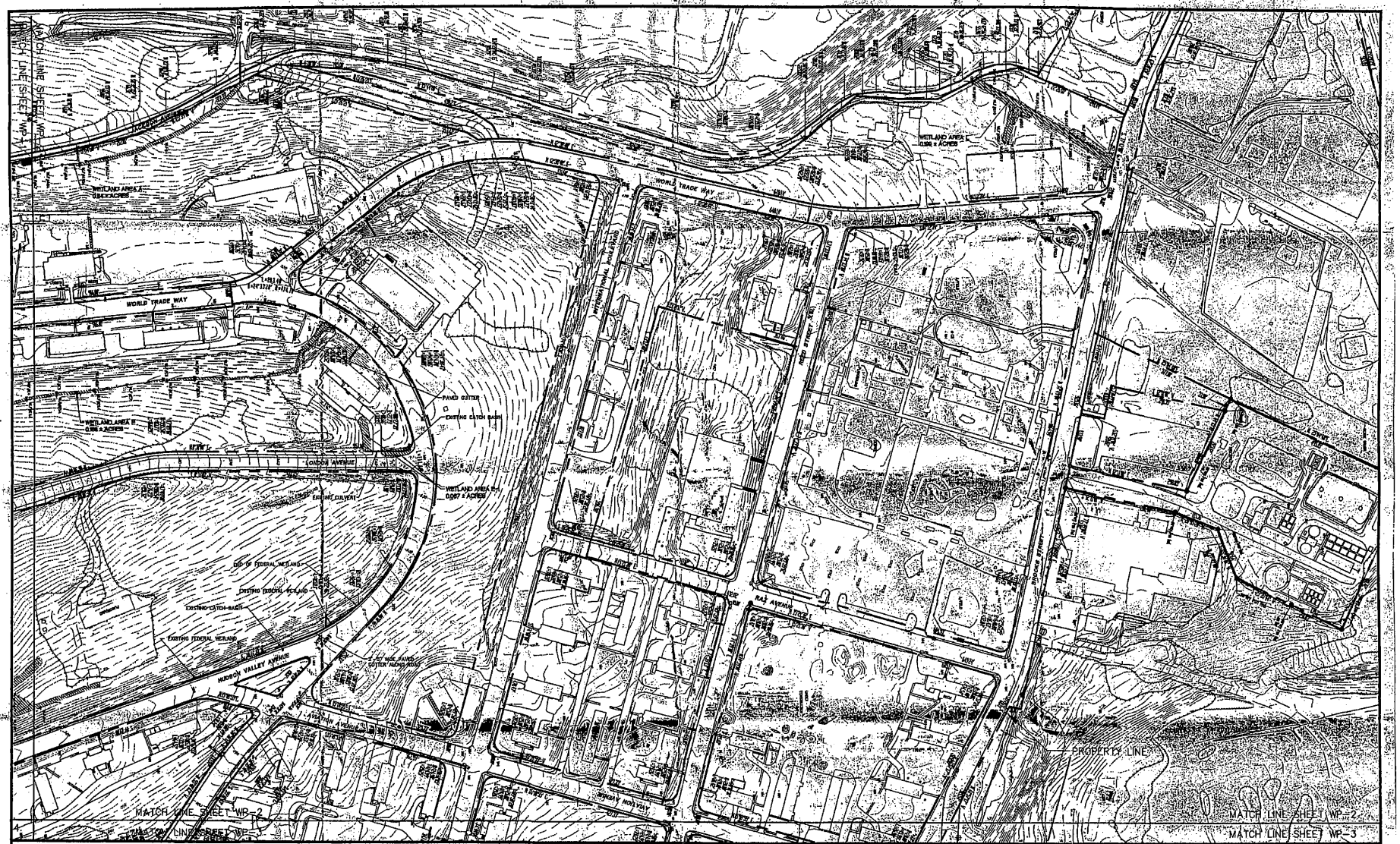
3.	1/18/02	REVISED PER COMMENTS
2.	8/29/01	REVISED PER CLIENT COMMENTS
1.	3/15/01	REVISED PER ACOE LETTER

FEDERAL WETLAND BOUNDARY SURVEY
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR
ORANGE COUNTY, NEW YORK

drawn	checked
date 2/15/01	scale 1" = 100'
project no. 010205	
sheet no. WP-1	



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3.	1/16/02	REVISED PER COMMENTS
2.	8/29/01	REVISED PER CLIENT COMMENTS
1.	3/15/01	REVISED PER ACOE LETTER

FEDERAL WETLAND BOUNDARY SURVEY
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR
ORANGE COUNTY, NEW YORK

drawn | checked
date 2/15/01 | scale 1" = 100'
project no. 018205
sheet no. WP-2

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3.	01/18/02	REVISED PER COMMENTS
2.	5/29/01	REVISED PER CLIENT COMMENTS
1.	3/15/01	REVISED PER ACOE LETTER

FEDERAL WETLAND BOUNDARY SURVEY
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR
ORANGE COUNTY, NEW YORK

drawn / checked
date 2/15/01 scale 1" = 100'
BL project no. 018235
sheet no. WP-3

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rev.	date	description
4.	05/14/02	REVISED PER COMMENTS
3.	1/18/02	REVISED PER COMMENTS
2.	8/29/01	REVISED PER CLIENTS COMMENTS
1.	3/15/01	REVISED PER ACOE LETTER

FEDERAL WETLAND BOUNDARY SURVEY
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR
ORANGE COUNTY, NEW YORK

drawn | checked
date 2/15/01 | scale 1" = 100'
project no. 018205
sheet no. WP-4

Stormwater Management Plan

New York International Plaza

Redevelopment of the Former Stewart Army Subpost

Town of New Windsor
Orange County, New York

December 6, 2002

THE Chazen COMPANIES

Prepared for:

First Columbia International
Group, L.L.C.
26 Century Hill Drive
Latham, New York 12110

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Stormwater Management Plan

New York International Plaza

Redevelopment of the Former Stewart Army Subpost

Town of New Windsor
Orange County, New York

December 6, 2002

THE Chazen COMPANIES

Prepared by:

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Orange County *(845) 567-1133*
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1.0 EXECUTIVE SUMMARY

The Chazen Companies have been retained by First Columbia International Group L.L.C. to conduct a Stormwater Management Master Plan for the redevelopment of the Stewart Army Subpost (STAS), "New York International Plaza", in the Town of New Windsor, Orange County, New York. This master plan considers subcatchments within the STAS property and those watershed components that overlay to adjacent off site properties. The master plan examines the impacts of redevelopment and the resultant offsite runoff to down gradient storm sewer infrastructure. The Stormwater Management Master Plan included review of existing topographic maps, soil maps, land use maps, and available record maps from the Stewart Army Subpost.

The Stewart Army Subpost (STAS) storm sewer system was historically owned and operated by the United States Military with construction occurring between 1943 and 1960. The STAS system includes a combination of open drainage swales and closed sewer pipes. Improvements on the system have been limited with the only known improvements to have been along International Boulevard as part of a New York State Department of Transportation project and at the southern end of Hudson Valley Avenue to support development of a manufacturing facility and medical office building.

The existing watershed is approximately 494(+/-) acres, which includes the STAS property of approximately 268(+/-) acres and upland drainage areas. The watershed discharges offsite at three locations. The first is located on the southeast portion of the subject site near a culvert crossing NYS Route 207; the second design point is located near the west portion of the subject site just prior to the culvert crossing the Catskill Aqueduct and the third discharge design point is located to the northwest and discharges to a stream and culvert crossing the Catskill Aqueduct. A portion of the watershed discharges to an existing detention pond located along the southern end of Breunig Road which is owned and operated by the New York State Department of Transportation (NYSDOT). Portions of the Stewart International Airport discharge to this same detention pond. The rainfall data for the analysis and design was taken from Technical Paper No. 40 of the US Weather Bureau for Orange County, New York.

Two models were developed for the watershed, an existing condition and proposed developed condition. The existing condition model measured current land cover and the conveying sewer infrastructure within the watershed. This model considered the current Town of New Windsor design standards for storm sewer design in determining possible and probable existing system deficiencies and off site discharge. The proposed condition model considered the possible development and determined the resulting watershed runoff, both locally within the watershed and existing infrastructure and globally at off site locations and down gradient

infrastructure. The developed condition model and resulting infrastructure design incorporates Town standards which requires examination of all tributary areas to a watershed with no net increase of off site runoff from pre-to-post-conditions. The NYSDEC guidelines were also considered to supplement the Town's design criteria

In order to facilitate the developed some of the existing storm sewer pipe sizes will need to be increased. This is due to existing sewers that currently function marginally relative to Town standards and existing sewers that would not function with the redevelopment offered. Additionally, some new sewers will be needed in areas that are currently undeveloped and without sewers.

On-site detention facilities are planned with final design completed at the site plan level in order to meet the Town and NYSDEC standard that post-development off site discharges must not exceed pre-development conditions. The plan provided includes four detention ponds that are sized to accommodate full build out of the contributing watersheds. Each of these detention ponds would be constructed in phases as the contributing watershed is developed. This would be achieved in two possible ways: constructing multiple cells that would be added for successive developments or enlarging one single basin each time an area is redeveloped.

Stormwater quality will be enhanced through the implementation of the stormwater management facilities, erosion control measures and suggested maintenance practices as described in Section 5 of this report. The Best Management Practices (BMP's) shall be implemented in the overall stormwater management plan for the proposed "New York International Plaza".

The proposed stormwater management plan for the redevelopment of STAS meets both the Town's and NYSDEC's standard for stormwater quantity and quality. The planned infrastructure improvements limited to main storm sewer trunks provides free flow through the system without detaining run-off at inlet structures up to the 25-year 24-hour storm event. Events in excess of the 25-year frequency are handled using available head at inlet structures with street flooding occurring for both the 50-year and 100-year events. Detention facilities have been sized to accommodate full development of the contributing watershed with no net increase in off site discharge with the sole exception being for the 25-year event at Design Point One (existing detention pond outlet at south end of Breunig Road) which has a 3% increase in run-off above pre-development conditions. The existing detention pond at the southern end of Breunig Road will have an increase in the volume of run-off stored, however, this increase is within the design capacity of the pond. The current outlet structure from the detention pond is an arrangement of multiple outlet pipes with varying sizes and invert elevations. Modification of this outlet structure with the addition of orifices at the low flow outlet pipes allows for a larger volume of runoff to be collected and stored, lowering the overall discharge from the pond. This modification would result in no net increase in discharge for all storm events.

2.0 INTRODUCTION

This report represents the Stormwater Management Master Plan for the re-development of the former Stewart Army Subpost into the "New York International Plaza", located in the Town of New Windsor, Orange County New York (herein after referred to as the subject site). The subject site consists of a 268-acre parcel bound by the intersection of NYS Route 207 and Breunig Road to the south east, the Stewart Airport runway apron to the north and Jackson Avenue to the west. The former site of the Stewart Army Subpost (STAS) once supported housing, training, maintenance and supply buildings, as well as on-site infrastructure and associated facilities.

This Stormwater Management Master Plan considers the impacts associated with the intended development with the purpose of:

1. Maintaining existing drainage patterns as much as possible while continuing the conveyance of upland watershed run-off;

2. Controlling increases in stormwater run-off resulting from the proposed and future development without adversely altering downstream conditions; and

3. Mitigating potential stormwater quality impacts and preventing soil erosion and sedimentation resulting from stormwater run-off.

To complete the analysis, existing and proposed stormwater run-off conditions are estimated and proposed stormwater management facilities have been described and evaluated.

The analysis and design completed and documented in this report is intended to be part of the redevelopment of STAS, "New York International Plaza", completed on behalf of First Columbia, with corporate office located in Latham, New York.

3.0 METHODOLOGY

The methodology used for the hydrologic and hydraulic analysis was obtained from the United States Department of Agriculture (USDA) Soil Conservation Service's (SCS) Technical Release No. 20, as implemented by the application program HydroCAD. HydroCAD, developed by Applied Microcomputer Systems of Chocorua, New Hampshire, is a Computer-Aided-Design (CAD) program for analyzing the hydrologic and hydraulic characteristics of a given watershed and associated stormwater management facilities. It utilizes the latest modeling techniques to predict the consequences of any given storm.

HydroCAD has the capability of computing hydrographs and routing flows through pipes, streams and ponds. Hydrographs represent discharge rate characteristics of specified watershed conditions, precipitation, and geologic factors. Documentation of HydroCAD is provided in Appendix B for reference.

For this analysis, the watershed and drainage system was broken down into a network consisting of three types of components described below:

1. Subcatchment: A relatively homogeneous area of land, which produces a volume and rate of surface run-off unique to that area.

2. Reach: Uniform streams, channels or pipes which convey stormwater from one distinct point to another reach or pond.

3. Pond: Natural or man-made impoundment (ie. pond), which temporarily stores stormwater run-off and empties in a manner determined by its geometry and the hydraulic structure located at its outlet(s).

Subcatchments, reaches and ponds are represented by hexagons, squares and triangles, respectively, on the watershed routing diagrams provided with the computations (see mapping in Appendices C & D).

4.0 SITE CONDITIONS

The evaluation of hydrologic and hydraulic characteristics associated with existing or proposed conditions considers elements such as land cover, soil types, groundwater conditions, topography, wetlands, surface waters and corresponding flood plains and rainfall depths.

4.1 Land Cover

Ground cover across the subject site includes woods, fields, grass, buildings and pavement. The highest point is located in the approximate center of the subject site, on which an existing reservoir stands. Ground cover throughout the central portion of the subject site is primarily undeveloped woods and open fields. The perimeter of the subject site is generally covered with existing support and housing structures and associated pavement areas (i.e. runways, parking, roadways and sidewalks). Ground cover throughout the remainder of the perimeter includes some wooded areas and grass.

4.2 Soils and Groundwater Conditions

Soils and groundwater conditions have been defined based on the USDA Soil Conservation Survey for Orange County, New York. This information is provided in Appendix B.

According to mapping provided in the USDA Soil Conservation Survey for Orange County, New York, six general soil types exist across the subject site. These soil types include: Mardin (MdB, MdC, MdD); Madalin (Ma); Erie (ESB); Bath-Nassau (BnB); Swartswood and Mardin (SXC); and Udorthents (UH). The soils map for the Stormwater Management Master Plan is provided in Appendix B.

The majority of the soils across the subject site are classified as Mardin soils, MdB, MdC, and MdD. The MdB and MdC soils are the dominate types of this soil series and are generally located across the central portion of the subject site. The Maadalin soils Ma are located across the southeast corner of the subject site. The Bath-Nassau soils BnB cover a very small portion near the southeast corner of the subject site near Breunig Road. The Erie soils ESB cover a small portion of the subject site to the south, near NYS Route 207. The Swartswood and Mardin SXC soils are located in a small pocket on the southwest portion of the subject site. The Udorthents soils UH are located to the north of the subject site near the existing Wastewater Treatment Facility.

TABLE 4.2
USDA SOIL CONSERVATION SURVEY SOIL TYPES

Soil Name	USDA Designation	Soil Type	Slope	Hydrologic Group
Mardin	MdB, MdC, MdD	gravelly silt loam	15% to 25%	C
Madalin	Ma	silty clay	Nearly Level	D
Erie	ESB	extremely stony	3% to 8%	C
Bath-Nassua	BnB	shaly silt loam	3% to 8%	C
Swartswood & Mardin	SXC	very stony	8% to 15%	C
Udorthents	UH	industrial / commercial sites	Nearly Level	Unclassified (assumed C)

4.3 Topography

A topographic survey map was prepared by Erdman Anthony Consulting Engineers from an aerial survey for the "Stewart Army Outpost" dated Dec. 9, 1992.

The topographic survey revealed that the subject site has a high point in the center and then slopes to the north, east, south, and west. These drainage paths are routed to three defined surface water discharge points via overland flow, drainage culverts, swales and subsurface piping to these discharge points. Elevations range from approximately 625.5 (+/-) above mean sea level (msl) at the center of the subject site to 414 (+/-) at a culvert crossing under the Catskill Aqueduct. The subject site slopes down to elevation 385 (+/-) along the southeast at the existing detention basin (pond no. 1) near NYS Route 207 and Breunig Road, and then to a culvert crossing Route 207. The subject site slopes to the west down to elevation 430(+/-) near the Catskill Aqueduct, and Jackson Avenue via a box culvert on the west property line. The site on the northeast slopes from elevation 505.1(+/-) to elevation 415.0(+/-) to the northwest near an existing swale and box culvert at Design Point 3.

4.4 Rainfall Data

Rainfall data used in the modeling and analysis was taken from Technical Paper No. 40, Rainfall Frequency Atlas of the U.S. Weather Bureau, published by the U.S. Department of Agriculture. Rainfall data specific to the portion of Orange County,

New York under consideration, for various 24-hour (Type III) storm events, is as follows:

TABLE 4.4
RAINFALL DATA

Storm	24-Hour Rainfall
2-year	3.5 inches
10-year	5.5 inches
25-year	6.5 inches
50-year	7.0 inches
100-year	8.0 inches

These values were used when evaluating existing and proposed stormwater run-off conditions in the model.

5.0 HYDROLOGIC AND HYDRAULIC ANALYSIS

Analyses of hydrologic and hydraulic conditions for the existing site and the proposed redeveloped site with stormwater management facilities were performed. Watershed characteristics were assessed from topography maps, soil surveys, site investigations, aerial photos/graphs and land use maps.

The hydrologic and hydraulic analysis considered the following Design Storms:

Table 5.0
DESIGN EVENTS

Facility	Design Storm
On-site Storm Sewers	10-year storm
Major Culverts	25-year storm
Detention Basin (pond)	2-year storm 10-year storm 25-year storm 50-year storm
Flood Conditions	100-year storm

The NYSDEC Memorandum (subject: Division of Water - Technical and Operational Guidance Series – 5.1.8 Stormwater Management Guidelines for New Development) and the Code of the Town of New Windsor design standards dated February 15, 2002, are considered in the analysis.

5.1 Existing Watershed Conditions

The delineated watershed includes approximately 494(+/-) acres, including the subject site [268 (±) ac.] and upland drainage areas. The watershed was divided into 42 subcatchments connected by 50 reaches and 1 pond to allow for analysis of run-off conditions to several areas around the subject site.

Design Point (1) is described as the open drainage swale discharging from an existing detention pond to a culvert crossing NYS Route 207 near the main entrance of STAS on Breunig Road. This design point receives stormwater runoff from the hill area near the center of the subject site as well as, southeast areas, which first discharge to an existing stormwater detention pond. The results of the computer modeling are presented in Appendix C and are summarized as follows:

TABLE 5.1(A)
EXISTING FLOW CONDITIONS NYIP SITE
DESIGN POINT 1
(SUBCATCHMENT 200, REACH 200 & POND #1)

Storm Event	Peak Flow
2-year	252.23 CFS
10-year	465.68 CFS
25-year	557.41 CFS
50-year	612.93 CFS
100-year	718.29 CFS

Design Point (2) is described as the culvert crossing under the Catskill Aqueduct to the west, which discharges to a point off-site. This design point receives stormwater runoff from west and southwest areas of the subject site. The results of the computer modeling are presented in Appendix C and are summarized as follows:

TABLE 5.1(B)
EXISTING FLOW CONDITIONS NYIP SITE
DESIGN POINT 2
(SUBCATCHMENT 27S & REACH 280)

Storm Event	Peak Flow
2-year	32.95 CFS
10-year	83.03 CFS
25-year	110.54 CFS
50-year	124.65 CFS
100-year	153.43 CFS

Design Point (3) is described as the culvert crossing under the Catskill Aqueduct, which discharges to a stream off-site and to the northwest. This design point receives stormwater runoff from the north and west areas of the subject site. The results of the computer modeling are presented in Appendix C and are summarized as follows:

TABLE 5.1(C)
EXISTING FLOW CONDITIONS NYIP SITE
DESIGN POINT 3
(SUBCATCHMENT 31 & 34, REACH 10)

Storm Event	Peak Flow
2-year	151.88 CFS
10-year	275.60 CFS
25-year	334.71 CFS
50-year	364.50 CFS
100-year	417.64 CFS

5.2 Proposed Watershed Conditions

"New York International Plaza" will potentially include the following: production/warehouse facility; medical office facilities; general office space; research and development facilities; retail locations; hotels; convention center; educational sites; restaurants; corporate housing; and service station.

The proposed drainage patterns consider and maintain the existing drainage patterns utilizing controlled releases, grass-lined swales, catch basins, subsurface stormwater detention systems and stormwater detention ponds. The delineated watershed includes approximately 494(+/-) acres, including the subject site and upland drainage areas. The watershed was divided into 50 subcatchments which are connected by 53 reaches and 22 pond(s) to allow for analysis of run-off conditions to several areas around the subject site. The proposed stormwater management plan will include portions of the existing infrastructure, which will be modified to convey the required storm events. Watershed delineation and proposed discharge locations, along with infrastructure improvements are identified on the mapping provided in Appendix D.

Design Point (1) remains the short open drainage swale discharging to a Route 207 culvert crossing, ultimately discharging to a point off-site. This design point receives overland flow routed through subsurface storm sewers along Breunig Road, and an open drainage swale, which discharges into an existing stormwater detention pond. This detention pond discharges to another open drainage swale, which ultimately discharges to the culvert crossing NYS Route 207. The Town has indicated that the outlet structure from this pond, which is a combination of outlet pipes varying in size and invert elevation does not function properly allowing for low flow runoff to pass through the pond with little to no detention occurring. Upon development of upland areas, the model indicates that the total flow from this basin will decrease for all storm events with the exception of the 25 year event which yields a 3-percent increase (refer to Table 5.2A below). By placing orifices restrictor plates on the low flow pipes, additional runoff could be stored thus lowering off site discharges, for all

storm events including the 25-year event. There would be no improvements required to the basin but only to the outlet structure.

TABLE 5.2(A)
PROPOSED FLOW CONDITIONS
DESIGN POINT 1
(REACH DP1)

Storm Event	Peak Flow
2-year	235.86 CFS
10-year	463.83 CFS
25-year	575.59 CFS
50-year	601.09 CFS
100-year	654.42 CFS

Design Point (2) remains the culvert crossing under the Catskill Aqueduct on the westerly portion of the subject site, which discharges off-site. The results of the computer modeling are presented in Appendix D and are summarized as follows:

TABLE 5.2(B)
PROPOSED FLOW CONDITIONS
DESIGN POINT 2
(REACH DP2)

Storm Event	Peak Flow
2-year	12.84 CFS
10-year	41.28 CFS
25-year	61.45 CFS
50-year	72.94 CFS
100-year	94.46 CFS

Design Point (3) remains the culvert crossing under the Catskill Aqueduct, which discharges to a stream off-site and to the northwest. The results of the computer modeling are presented in Appendix D and are summarized as follows:

TABLE 5.2(C)
PROPOSED FLOW CONDITIONS
DESIGN POINT 3
(REACH DP3)

Storm Event	Peak Flow
2-year	99.25 CFS
10-year	229.75 CFS
25-year	304.17 CFS
50-year	341.33 CFS
100-year	411.41 CFS

Under proposed conditions, stormwater is conveyed across the subject site, with on-site detention facilities employed to attenuate increases in run-off resulting from the introduction of impervious surfaces.

5.3 Proposed System Improvements

In order to facilitate the developed some of the existing storm sewer pipe sizes will need to be increased. This is due to existing sewers that currently function marginally relative to Town standards and existing sewers that would not function with the redevelopment offered. Additionally, some new sewers will be needed in areas that are currently undeveloped and without sewers.

Under existing conditions, sections of sewers along the western ends of Reed Street and International Boulevard at the intersection with Breunig Road and along Raz Avenue do not flow freely, with runoff being detained at inlet structures for events beyond the 2-year 24-hour storm frequency. All proposed development adjacent to this infrastructure will not connect to existing sewers and will have separate sewers parallel to existing of adequate size to convey runoff.

Sections of sewer that conveyed stormwater under existing conditions would no longer be capable of handling runoff from redeveloped areas. This is evident along Breunig Road from the intersection of International Boulevard south to Airport Center Drive, Airport Center Drive from Hudson Valley Avenue southeast to Breunig Road, and World Trade Way north from the intersection of Airport Center Drive. Existing sewers along World Trade Way north from the intersection of Airport Center Drive and along Airport Center Drive from the intersection of Hudson Valley Way southeast to Breunig Road would be replaced with larger diameter sewers. In order to allow for development along International Boulevard and Breunig Road new sewers of adequate size will be installed run parallel to existing sewers so that the existing infrastructure will not require improvements.

New stormwater facilities have been installed supporting the recent development along the southern end of Hudson Valley Avenue. Additional sewers would be required to convey flows to allow for further development, east of this area. The proposed development of the research and development area would require additional sewers with the most likely routing to be east towards Avenue of the Americas. The proposed corporate housing area will require additional sewers, however, for the purpose of this study increases in runoff are directed directly to a proposed detention basin. Upon completion of an in-depth design of this area, sewer sizes and routes would be defined.

In order to meet the Town and NYSDEC standard that post development off site discharges must not exceed pre-development conditions, on-site detention facilities have been defined. The plan includes four detention ponds that are sized to accommodate full build out of the contributing watersheds. Each of these detention ponds would be constructed in phases as the contributing watershed is developed. This would be achieved in two possible ways: constructing multiple cells that would be added for successive developments or enlarging one single basin each time an area is redeveloped.

The following table provides estimated maximum storage volumes of each basin proposed.

TABLE 5.3
PROPOSED DETENTION POND VOLUMES

Pond	Volume
Pond2	11.0(+/-) AF
Pond 3	6.5 (+/-) AF
Pond 4	3.0 (+/-) AF
Pond 5	7.0 (+/-) AF

Smaller on-site detention facilities for individual sites will be required in addition to the four regional detention facilities. These individual detention facilities will alleviate anticipated increases in run-off due to larger impervious areas. Actual design of the facilities would be defined at the site plan level with approximate storage volumes defined in this plan.

The phasing of the development plan is not known at this time. All of the improvements defined have been sized based on full build-out. There are portions of the existing infrastructure that can handle proposed development as well as smaller portions of new/replacement sewers that could be installed to accommodate sections of the development.

6.0 CONCLUSION

The Chazen Companies has completed a Stormwater Management Plan for the development of the "New York International Plaza", which included review of existing and proposed drainage patterns, hydrologic and hydraulic analysis under both existing and proposed conditions and an in-depth comparison of pre- and post-development conditions.

The stormwater management plan allows for the maintenance of existing drainage patterns while continuing the conveyance of upland watershed areas. The plan controls increases in stormwater run-off resulting from the proposed development without adversely affecting downstream conditions. This is demonstrated by comparing flows for various storm events. The following information is tabulated for such comparison.

TABLE 6.0(A)
COMPARISON AT THE EXISTING POND DESIGN POINT 1
(REACH DP1)

Storm Event	Existing Off Site Run-Off	Proposed Off Site Run-Off	Net Increase/ Decrease in Off Site Flow
2 year	252.23 CFS	235.86 CFS	-16.4 CFS (-6.5%)
10 year	465.68 CFS	463.83 CFS	-1.85 CFS (-0.4%)
25 year	557.41 CFS	575.59 CFS	18.18 CFS (3.3%)
50 year	612.93 CFS	601.09 CFS	-11.84 CFS (-1.9%)
100 year	718.29 CFS	654.42 CFS	-63.87 CFS (-8.9%)

Based on a comparison of the results, for both watershed conditions stormwater runoff from all of the storm events decreased slightly with the exception of the 25-year event, which increases slightly. The 18.18 CFS increase represents a 3.3 percent increase above existing off-site discharges. In order to mitigate this increase, possible outlet control modifications may be employed at the existing detention pond outlet or providing the same within proposed on-site detention ponds. These options will be examined upon completion of more in-depth design with final off-site discharges not exceeding post development conditions.

TABLE 6.0(B)
COMPARISON AT DESIGN POINT 2
(REACH DP2)

Storm Event	Existing Off Site Run-Off	Proposed Off Site Run-Off	Net Increase/- Decrease in Off Site Flow
2 year	32.95 CFS	12.84 CFS	-20.11 CFS (-61.0%)
10 year	83.03 CFS	41.28 CFS	-41.75 CFS (-50.3%)
25 year	110.54 CFS	61.45 CFS	-49.09 CFS (-44.4%)
50 year	124.65 CFS	72.94 CFS	-51.71 CFS (-41.4%)
100 year	153.43 CFS	94.46 CFS	-58.97 CFS (-38.4%)

Based on a comparison of the results, for both watershed conditions stormwater runoff at the design point decreased for all of the events up to and including the 100-year storm.

TABLE 6.0(C)
COMPARISON AT DESIGN POINT 3
(REACH DP3)

Storm Event	Existing Off Site Run-Off	Proposed Off Site Run-Off	Net Increase/ Decrease in Off Site Flow
2 year	151.88 CFS	99.25 CFS	-52.63 CFS (-34.7%)
10 year	275.60 CFS	229.75 CFS	-45.85 CFS (-16.6%)
25 year	334.71 CFS	304.17 CFS	-30.54 CFS (-9.1%)
50 year	364.50 CFS	341.33 CFS	-23.17 CFS (-6.4%)
100 year	417.64 CFS	411.41 CFS	-6.23 CFS (-1.5%)

Based on a comparison of the results, for both watershed conditions stormwater runoff at the design point decreased for all of the events up to and including the 100-year storm.

TABLE 6.0(D)
COMPARISION AT EXISTING DETENTION POND

Storm Event	Storage			Peak Water Elevation			Depth Of Water		
	Existing	Proposed	Net Inc/Dec	Existing	Proposed	Net Inc/Dec	Existing	Proposed	Net Inc/Dec
2 year	53,438 CF	53,056 CF	-382 CF (-0.7%)	388.95'	388.93'	-0.02'	4.45'	4.43'	0.02'
10 year	97,065 CF	109,146 CF	12,081 CF (12.5%)	391.02'	391.53'	0.51'	6.52'	7.03'	0.51'
25 year	125,253 CF	144,417 CF	19,164 CF (15.3%)	392.17'	392.83'	0.66'	7.67'	8.33'	0.66'
50 year	139,071 CF	149,633 CF	10,562 CF (7.6%)	392.65'	393.01'	0.36'	8.15'	8.51'	0.36
100 year	159,457 CF	160,412 CF	955 CF (0.6%)	393.34'	393.37'	0.03'	8.84'	8.87'	0.03

Note: Bottom of Pond elevation = 384.5'
Flood elevation = 394.0'
Outlet pipes = 66" @ 384.84'; 48" @ 384.84'; 48" @ 384.64'
26.6 deg.x 10' sharp crested weir @ 392.0'

Based on a comparison of the results for both watershed conditions stormwater run-off for the existing detention pond conveys the proposed development runoff with out exceeding the ponds flood elevation.

The comparison of existing and proposed watershed conditions demonstrates that off-site peak flow and volume conditions at all design points have no significant increases, with no adverse impact on the down gradient systems or properties.

The proposed development includes measures to control the rate of stormwater run-off and the quality of stormwater run-off. These measures include the following improvements:

- **Proposed grass lined swales:** Grass lined swales are proposed to collect stormwater run-off and reduce peak discharge rates. The swales function as a way to infiltrate stormwater and to filter out particulate pollutants as well to promote chemical flocculation and biological uptake. The grass-lined swales improve stormwater quality while regulating rate and volume of runoff.

- **Sump Pits in Drainage Structures:** Proposed catch basin and manhole structures will be designed with sumps and/or sanitary tees to assist with the removal of suspended materials.

- **Detention Ponds with "first flush basins":** The ponds proposed will help control the stormwater quantity and quality by allowing for retention of the first flush of run-off in a sedimentation basin within the pond. This area of the pond will collect sediments from the first flush run-off and aid in preventing the transportation of sediment/pollutant loads down gradient.. The sedimentation basin also serves as a collection location for removal of built up sediment. The proposed stormwater infrastructure will include four additional detention ponds. The required pond volumes are as follows:

TABLE 6.0(F)
PROPOSED DETENTION POND VOLUMES

Pond	Volume
Pond 2	11.0+/- AF
Pond 3	6.5+/- AF
Pond 4	3.0+/- AF
Pond 5	7.0+/- AF

The pond sizes provided are for full build out of NYIP. It would be the intent that each of the basins would be designed only to handle development as it logically proceeded. Therefore, actual sizes would be smaller as development progressed with ultimate sizes as indicated. It would be the design intent that each pond would be designed with cells that would handle independent developed areas. As development increases, either additional cells would be added or existing pond sizes would be increased.

- **Grading & Erosion Control Measures:** Grading, erosion control measures and maintenance should be followed as outlined previously in this report. During construction silt fence and hale bales should be used to help control the transportation of sediments.

- **Subsurface Detention Structures:** Subsurface detention may be implemented, as appropriate, on a site-by-site basis and would be installed under parking lots and open landscaped areas. This type of system is designed to store a volume of stormwater in the systems underground piping network. The runoff is released to an outflow structure at a predetermined rate. Structures are to be used in conjunction with oil-water separators/grit chambers and sediment traps.

Stormwater quality will be enhanced through the implementation of proposed management facilities, erosion control measures and suggested maintenance practices. The Best Management Practices (BMP's) shall be implemented in the overall stormwater management plan for the NYIP site.

In closing, it is our opinion that the proposed stormwater management plan for the redevelopment of STAS meets both the Town's and NYSDEC's standard for stormwater quantity and quality. The planned infrastructure improvements limited to main storm sewer trunks provide free flow through the system without detaining run-off at inlet structures up to the 25-year 24-hour storm event. Events in excess of the 25-year frequency are handled using available head at inlet structures with street flooding occurring for both the 50-year and 100-year events. Detention facilities have been sizes to accommodate full development of the contributing watersheds with no net increase in off site discharge with the sole exception being for the 25-year event at Design Point One which has a 3% increase in run off from pre development conditions. The existing detention pond at the southern end of Breunig Road will have an increase in the volume of run off stored, however, this increase is within the design capacity of the pond.

If you have any questions or comments, or you require further information, please contact this office at (518) 235-8050.

Respectfully Submitted:

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Appendix A:
HydroCAD Documentation

HydroCAD™

STORMWATER MODELING SYSTEM

Version 3

TECHNICAL REFERENCE MANUAL

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NOTE: Ongoing software development often makes it difficult to keep printed documentation fully up-to-date. Please review any yellow update sheets at the end of this manual for information on recent changes. If you encounter any new features while running the program you can usually get more information by pressing HELP. Any new features will be included in the next update of the manual.

Section 1 - INTRODUCTION

Understanding HydroCAD

HydroCAD is a collection of techniques for the generation and routing of hydrographs. It also provides many other related calculations such time of concentration, weighted curve numbers, pond volumes, stage-discharge curves, etc. This broad range of capabilities allows a large number of studies to be performed entirely within HydroCAD.

But HydroCAD provides features that go far beyond its computational capabilities. It provides an automatic graphical environment which provides enormous gains in productivity and clarity over traditional drainage software. Please see the HydroCAD Users Guide for details on these operational features.

HydroCAD is a *hydrograph routing model*. It is designed specifically to handle *time varying flows*, as required for pond design and other volume-sensitive calculations. As such, HydroCAD routes completely through one structure at a time. Only after determining the outflow hydrograph from a given structure does it consider the next structure downstream.

Certain calculations, such as channel backwater or pressurized pipe networks, are normally analyzed under *constant flow* conditions. These tasks are best addressed by steady-state numerical techniques, and not by a hydrograph routing system, such as HydroCAD. In fact, many problems will involve the use of HydroCAD to model the overall drainage system, plus a steady-state analysis of specific components. This is an unavoidable consequence of the different methodologies.

Using this Manual

This manual describes the exact calculations performed by HydroCAD. It is intended to provide the engineer with insight into these techniques so that their application and limitations can be better understood. This manual also provides the information necessary for independent verification of HydroCAD's results.

Where additional information is needed the reader is urged to consult the references listed at the end of this manual. In each section specific references are made to the appropriate sources. All references are of the form [3 p.12], meaning reference number 3, page 12.

This manual does *not* contain operating instructions for HydroCAD, or information on the routing diagram or other operational features. Please see the HydroCAD User's Guide for this information.

Section 2 - DETERMINING THE TIME OF CONCENTRATION

One of the key elements required for any runoff calculation is the *Time of Concentration*, or T_c. The T_c is commonly defined as the time required for runoff to travel from the most hydrologically distant point of the watershed to the point of collection.

The time of concentration is frequently determined by summing the travel time (T_t) for each consecutive *flow segment* along the subcatchment's hydraulic path. This process requires identification of the type of flow occurring in each segment, and applying the appropriate method for calculating the T_t. HydroCAD provides a considerable variety of procedures for calculating the T_t, plus other procedures (such as the Curve Number method) which are designed to directly determine the overall T_c.

The various procedures provided by HydroCAD are discussed below. If necessary, the T_c or T_t may also be determined by any other procedure and entered into HydroCAD directly. The determination of the time of concentration is one of the most widely discussed areas of hydrology. The actual method(s) used on any given project must depend on actual site conditions, regulatory requirements, and sound engineering judgement.

The Curve Number Method [10 p.15-7] was developed to allow calculation of the overall T_c under a wide range of conditions. The method is designed for areas of 2000 acres or less. The calculation is quite simple, but requires a proper understanding of the input requirements:

$$T_c = \frac{L}{.6} \quad \text{where} \quad L = \frac{l^{.8}\,(s+1)^{.7}}{1900\,Y^{.5}} \quad \text{and} \quad S = \frac{1000}{CN} - 10 \qquad \text{Eq. 1}$$

T_c = Time of concentration (hours)
L = Lag time (hours)
l = Hydraulic length of the watershed (feet)
Y = Average land slope (percent)
S = Potential maximum retention (inches)
CN = Weighed Curve Number (See Appendix A)

Note the use of the average *land* slope, and not the slope of the hydraulic path. Determining this accurately requires placing a grid over the subcatchment and averaging the slopes for all squares. Although some care is required to determine this value, the Curve Number method has the advantage of using a small number of fairly objective parameters. This provides more consistent results than some other approaches.

The TR-55 Sheet Flow procedure [11 p.3-3] is designed for flow over plane surfaces, as usually occurs in the headwaters of a stream. The following equation is used for sheet flow of less than 300 feet:

$$T_t = \frac{0.007\,(nL)^{.8}}{P_2^{.5}\,s^{.4}} \qquad \text{Eq. 2}$$

T_t = Travel time (hours)
n = Manning's coefficient for sheet flow (See Appendix F)
L = Flow length (feet)
P_2 = 2-year, 24-hour rainfall (inches) (See Appendix B)
s = Land slope (ft/ft)

The Upland Method [11 p. 15-6] is designed for conditions which occur in the headwaters of a watershed, including overland flow, grassed waterways, paved areas, and through small upland gullies. Upland method is applicable to areas of 2000 acres or less. Although commonly published as a chart of velocity vs. slope for various surfaces, upland method is based on the following equation:

$$T_t = \frac{L}{3600\ V} \quad \text{where} \quad V = K_v \sqrt{s} \qquad \text{Eq. 3}$$

T_t = Travel time (hours)
L = Flow length (feet)
V = Average velocity (fps)
K_v = Velocity factor (See Appendix G)
s = Land slope (ft/ft)

The TR-55 Shallow Concentrated Flow procedure [11 p.3-3] is of the same mathematical form as the Upland Method (above.) The essential difference is that it utilizes only two surface types, *paved* and *unpaved*. (See Appendix G for the corresponding K_v values for these surfaces.) Due to the similarity between Upland Method and Shallow Concentrated Flow, HydroCAD utilizes a single screen for both methods, and combines the K_v values from both methods into a single table.

The Channel Flow procedure [11 p.3-3] is commonly employed where surveyed cross sections are available, or anywhere the velocity can be reasonably determined by Manning's equation.

$$T_t = \frac{L}{3600\ V} \quad \text{where} \quad V = \frac{1.486\, r^{2/3} s^{1/2}}{n} \quad \text{and} \quad r = \frac{a}{P_w} \qquad \text{Eq. 4}$$

T_t = Travel time (hours)
L = Flow length (feet)
V = Average velocity (fps)
n = Manning's coefficient (See Appendix C)
s = Channel slope (ft/ft)
r = Hydraulic radius (feet)
a = Cross sectional flow area (sq-feet)
P_w = Wetted perimeter (feet)

In addition to allowing direct entry of cross sectional area and wetted perimeter, HydroCAD can automatically calculate these parameters for rectangular, vee, trapezoidal, parabolic, and circular channels. See Appendix K for details.

Section 3 - SCS RUNOFF METHODOLOGY

HydroCAD provides the SCS TR-20 runoff procedure [2]. This is a *unit hydrograph procedure* which requires the following input data:

The curve number (CN) characterizes the type of soil and ground cover. A high CN (such as 98 for pavement) indicates minimum retention while a low CN (such as 30 for some woods) indicates a large retention capability. Appendix A provides detailed curve number tables taken from [11]. See [10] for a detailed explanation of CN selection. In the case of a subcatchment composed of more than one CN HydroCAD will calculate a composite CN by summing the products of each CN multiplied by its percentage of the total area.

The total storm Rainfall (in inches) is determined for any specific location from U.S. Weather Bureau maps based on the desired return period (2, 5, 10, 25, 50, or 100 years). This is the total precipitation which will occur during the storm. Appendix B contains rainfall maps for the United States reprinted from [11].

A storm Type is specified according to the specific location. For each storm type HydroCAD contains a mass curve indicating how the rainfall will be distributed over the total duration of the storm. These curves have been compiled by the U.S. Weather Bureau by combining many observed storms to create a typical curve. In order to combine different storms into a representative curve the peak intensity of each storm has been adjusted so as to occur at a common time. For a 24-hour storm the maximum intensity occurs at 12 hours.

HydroCAD contains rainfall distributions for type I, IA, II, and III storms of 24-hour duration as discussed in Appendix B. The rainfall data was obtained directly from the S.C.S. in the form of second-order fitted equations. This method guarantees a smooth runoff hydrograph free of "steps" or other irregularities. The actual data for these storms (and others) is contained in the file HYDRO_RF included with HydroCAD. Additional storms may be added by editing this file. See the instructions in the file for details.

The unit hydrograph is a dimensionless curve which shows the runoff distribution resulting from one inch of precipitation excess occurring uniformly over the watershed during a specified duration. [1 p.47] HydroCAD provides the standard S.C.S. unit hydrograph [2 p.240], plus others, in the file HYDRO_UH. Additional unit hydrographs may be added by editing this file. See the instructions in the file for details.

The runoff hydrograph is generated by performing a *convolution of the unit hydrograph with the rainfall excess* as described in [1 p.47-53] and [10 p.16-2]. A brief description of the HydroCAD implementation follows:

1) At any time during the storm the cumulative precipitation (rainfall depth) can be determined from the selected rainfall distribution and the total rainfall depth. The cumulative water available for runoff can then be determined by the SCS runoff equation [11 p.2-1] & [10 p.10-5]:

$$Q = \frac{(P-.2S)^2}{P+.8S} \quad (Q=0 \ \ if \ \ P<.2S) \qquad \text{Eq. 5}$$

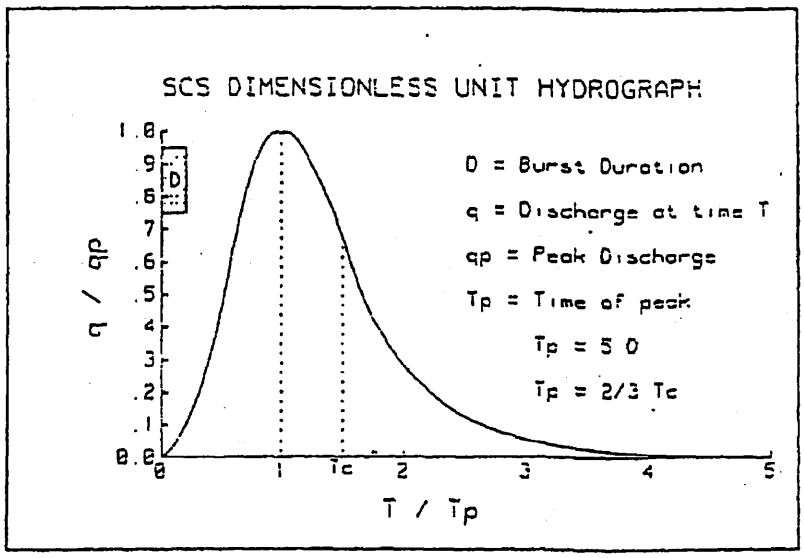
$$where \quad S = \frac{1000}{CN} - 10$$

Q = Precipitation excess (runoff) [inches]
P = Cumulative precipitation [inches]
S = Potential maximum retention [inches]
CN = Curve number

2) The storm is divided into a series of rainfall *bursts* of duration D=2/15 Tc. The precipitation excess occurring *during* any interval D at time t can be calculated by:

$$dQ = Q_{t-D} - Q_t \qquad \text{Eq. 6}$$

3) For each burst, the unit hydrograph defines how this volume of runoff will occur over time. The *volume* of the unit hydrograph is given by dQ (above). The *duration* of the unit hydrograph is related to Tc and D as shown. The result is that the *dimensionless* unit hydrograph has been dimensioned.



4) The runoff from the entire storm is determined by summing the hydrographs resulting from each rainfall burst.

TR-20 Runoff Considerations

1) The individual unit hydrographs are summed together to create a composite runoff hydrograph. This hydrograph consists of the *average* flows during each interval "dt". As a result, if a narrow peak occurs within an interval you will get the average of the peak and its shoulders, which *may* be significantly less than the instantaneous peak value. Therefore, if T_c is less than 2dt HydroCAD will provide an informative warning message. When you encounter this situation, keep in mind that the instantaneous peak can exceed the average for a time no longer than dt, which is commonly 6 minutes. In practice, such a short instantaneous peak is usually attenuated to the average value by the storage characteristics of the first reach or pond. However, if a true instantaneous peak is required the calculation time interval should be temporarily reduced to, say, 10 to 14 hours.

2) TR-20 has no inherent limitations on the time of concentration. As T_c approaches 0 the runoff curve will approach the precipitation excess curve, which is the expected limiting case. Similarly, for very large T_c the entire storm will become a single rainfall "burst" and the runoff will approach the shape of the unit hydrograph.

3) When making comparisons to TR-55, note that the TR-55 tables were produced for a curve number of 75 and require a precipitation excess of at least 1.5 inches. As conditions deviate from these an increasing difference of up to 25% can be expected.

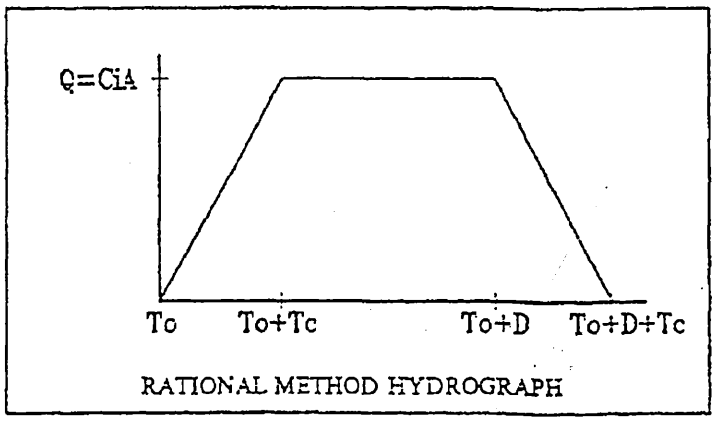
Section 4 - RATIONAL METHOD

The Rational Method may be used to generate runoff hydrographs. However, since it was developed primarily for predicting peak flow, its use is *not* advised for volume-sensitive routing calculations. The Rational method predicts the peak runoff according to the formula:

$$Q = CIA \qquad \text{Eq. 7}$$

Q = Peak Runoff [CFS]
C = Runoff Coefficient
i = Rainfall intensity [in/hr]
A = Area [acres]

In order to generate a complete hydrograph (as required by HydroCAD) it is assumed that the runoff begins at the start of the storm and increases linearly to the peak value at time T_c. The peak runoff is sustained until the storm duration (D) has elapsed, and then decreases linearly to zero over the interval T_c.



RATIONAL METHOD HYDROGRAPH

The runoff will always begin at the starting time given in the Calculation Control Screen. This may be 10 hours, 0 hours, or any other desired time.

If C is not specified a warning message will be issued and the approximation C=CN/100 will be used. This estimate is implemented only for the purpose of performing a *preliminary analysis* and must be verified to produce reliable results.

The user must chose the *critical duration* (and the corresponding intensity) which results in the maximum combined runoff at *each point of study*. Depending on the specific watershed this may occur at any duration between the shortest and longest T_c. As the study progresses downstream the critical duration will generally increase, but some trial and error will be required for an accurate determination. Note that as the duration is changed all upstream subcatchments are properly recalculated for the new value. This is the correct procedure for applying the Rational Method, despite a common misuse of the method in which these values remain the same.

Since a hydrograph produced by the Rational Method does not reflect the total storm runoff or the variation in intensity, it SHOULD NOT BE USED for the design and analysis of detention ponds. It is strongly advised that the TR-20 methodology be used when detention ponds are involved.

Section 5 - REACH ROUTING CALCULATIONS

This section details the procedures used by HydroCAD to perform hydrograph routing through a reach.[1] Reach routing requires that the reach first be characterized by two curves: the end-area vs. depth, and the discharge vs. depth (stage-discharge). This information may be determined by one of three procedures:

1) The user may enter these curves directly by specifying the end-area and discharge at up to 15 different depths.

2) The user may enter the wetted perimeter (instead of the discharge) and Manning's equation will be used to determine the discharge as follows: [3 p.77]

$$V = \frac{1.486 R^{\frac{2}{3}} S^{\frac{1}{2}}}{n} \qquad \text{Eq. 8}$$

V = Average velocity of flow [feet/sec]
R = Hydraulic radius [feet]
S = Slope of channel bottom [rise/run]
n = Manning's number (See Appendix C)

$$\text{also} \quad R = \frac{A}{P} \quad \text{and} \quad Q = VA \qquad \text{Eq. 9}$$

A = Area of flow [sq-feet]
P = Wetted perimeter [feet]
Q = Flow [CFS]

$$\text{thus} \quad Q = \frac{1.486 \left(\frac{A}{P}\right)^{\frac{2}{3}} S^{\frac{1}{2}} A}{n} = 1.486 \frac{A^{\frac{5}{3}} S^{\frac{1}{2}}}{n P^{\frac{2}{3}}} \qquad \text{Eq. 10}$$

3) For certain standard shapes (rectangular, vee, or trapezoidal channel, or a circular pipe) the user may provide the appropriate dimensions and HydroCAD will determine the end area and discharge curves. These are determined according to the area and perimeter equations in Appendix H, and Manning's equation, above.

Since the stage-discharge relationship is based solely on Manning's equation, it does not consider inlet conditions. It assumes that the Manning's flow, and not the inlet, is the controlling factor. Similarly, all automatic pipe sizing is based on Manning's equation alone. If a complete analysis is desired for a pipe reach, including entrance losses, simply model the reach as a pond with a culvert outlet.

[1] A reach is used for an independent routing calculation. If you wish to accommodate a channel or pipe as part of the Tc calculation, it should be defined as a flow segment within a subcatchment, and not as an independent reach.

Reach Routing Calculations

The storage indication method[2] is provided for routing through a reach. This standard procedure is well described in [1 p.64-65] and will not be repeated here. Additional operations are performed by HydroCAD as follows:

1) Before routing begins, any base flow is added to the inflow hydrograph and any exfiltration is subtracted.

2) If a pipe is being re-sized, its diameter is calculated with Manning's equation based on the peak inflow.

3) Storage indication requires a storage vs. depth curve. This is obtained by multiplying the end area vs. depth curve by the length of the reach.

4) If the range of the storage and discharge curves is exceeded HydroCAD will extrapolate from the last two points on each curve. If this fails due to a decreasing discharge curve the routing will be aborted and a warning message issued. (Note that such extrapolation is only an approximation. For accurate routing the discharge and end-area curves should be extended.)

5) If the peak inflow exceeds the Manning's normal flow capacity of the reach a warning will be issued. Depending on the design criteria this *may* be an acceptable condition. A reach can handle more than its normal flow capacity when the flow is *not* normal, such as on the rising limb of a storm hydrograph. However, if such flow persists the reach will fill with water causing one of the following conditions:

6a) If an open channel fills with water (as defined by the flood elevation) a warning message will be issued. The routing will continue using the extrapolated curves if required.

6b) If a pipe fills with water the excess will be detained without head so that open-channel conditions can be maintained. A warning message will be issued and the detained water will be routed when the pipe is no longer full. (If you want to model the inlet head you can describe the pipe as a culvert outlet on a pond, as described in the next Section.)

Special Reach Routing Considerations

The primary limitation of storage-indication when applied to a reach is that the time delay (translation) of the outflow will be underestimated. This is due to the fact that storage-indication considers only the storage behavior of the reach (as if it were a pond) and does not include the kinematic effects. When several reaches are combined this will generally result in a higher peak (due to less delay between the peaks) and therefore a more conservative design.

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[2] Since this procedure underestimates the kinematic effects of reach routing, is should be used carefully in situations where a greater delay in the peak flow would have an adverse effect on the analysis or design. This is usually not a problem in small sites where kinematic effects are minimal.

Section 6 - HYDRAULICS CALCULATIONS

This section details the hydraulic calculations used within HydroCAD. This information applies primarily to the determination of the discharge resulting from a given head applied to each device. They are used primarily in determining the stage-discharge curve for a pond. All equations determine the discharge, Q, in CFS.

V-Notch Weir [5 p.5-15]

$$Q = C \tan\frac{\theta}{2} H^{2.5} \qquad \text{Eq. 11}$$

C = English weir coefficient
θ = Notch angle
H = Head [feet above invert elevation]

C may be entered directly, or determined by HydroCAD according to the equation:

$$C = 2.46 + \frac{\tan(90-\theta/2)}{25} \qquad \text{Eq. 12}$$

Broad-Crested Rectangular Weir [6 p.274]

$$Q = C\,L\,H^{3/2} \qquad \text{Eq. 13}$$

C = English discharge coefficient
L = Crest length [feet]
H = Head [feet above invert elevation]

C varies with H depending on the shape of the weir. For the weir under consideration C must be specified at one or more of the following heads: .5, 1, 1.5, 2, 2.5, 3, 4, 5 feet. For intermediate heads HydroCAD will interpolate linearly between the values given. For heads below or above the given range HydroCAD will use the first or last coefficient <u>without</u> extrapolation. Metric discharge coefficients for various weirs are given in Appendix D which is reprinted from [6 p.276]. To obtain the English coefficients (as required by HydroCAD) multiply by 1.81.

Sharp-Crested Rectangular Weir [7 p.362]

$$Q = C\,L_e\,H^{3/2} \quad \text{where}$$

$$C = 3.27 + .4\frac{H}{P} \quad \text{and} \quad L_e = L - \frac{nH}{10} \qquad \text{Eq. 14}$$

L = Crest length (feet)
L_e = Effective crest length (reduced for end contractions)
P = Crest height (feet above approach channel)
n = Number of end contractions (0, 1, or 2)
H = Head (feet above invert elevation)

Circular Orifice [5 p.4-3]

$$Q = C\,a\,\sqrt{2gh} \qquad \text{Eq. 15}$$

C = Discharge coefficient (Default is .60)
a = Submerged area (sq-feet)
g = Gravitational constant
h = Head above *center* of orifice (feet) given by:

$$h = H - r \quad (\textit{if fully submerged})$$

$$h = \frac{H}{2} \quad (\textit{if partially submerged}) \qquad \text{Eq. 16}$$

H = Head above invert (feet)
r = Radius

When partially submerged this adjustment closely approximates the weir discharge of an orifice. It also provides continuity between the fully and partially submerged conditions. For critical situations the resulting discharge curve should be verified by independent means.

For a horizontal orifice (circular or rectangular) the above equation is used without adjustment of the head.

Rectangular Orifice

The discharge equation for a rectangular orifice under any head condition is derived from the discharge through a thin horizontal strip: [5 p.4-3]

$$dQ = CL\sqrt{2gY}\,dY \qquad \text{Eq. 17}$$

C = Discharge coefficient (Default is .60)
L = Strip length (width of orifice) [feet]
g = Gravitational constant
Y = Head over center of strip [feet]
dY = Height of horizontal strip

Integrating over the height of the orifice yields:

$$Q = \frac{2}{3}\,C\,L\sqrt{2g}\,(H^{3/2} - [H-M]^{3/2}) \qquad \text{Eq. 18}$$

H = Head above invert elevation [feet]
M = Height of orifice [feet]

When the orifice is partially submerged (H < M) the term [H-M] becomes zero and this reduces to the weir equation:

$$Q = \frac{2}{3}\,C\,L\sqrt{2g}\,H^{3/2} = 3.21\,L\,H^{3/2} \qquad \text{Eq. 19}$$

Culvert Flow

Six types of culvert flow are identified in [9 p.E-1,7] and are characterized as follows: (Also see [8 p.21-18,19])

Type	Inlet	Outlet	Slope	Flow Type	Tail Water Dependent?	Type of Control
1a	SUB.	SUB.	ANY	PIPE	YES	OUTLET
1b	SUB.	FREE	MILD	PIPE	NO	OUTLET
1c	SUB.	FREE	ANY	CHANNEL	NO	INLET (orifice)
2a	FREE	TW > Yc	MILD	CHANNEL	YES	OUTLET
2b	FREE	TW < Yc	MILD	CHANNEL	NO	OUTLET
2c	FREE	TW < Yc	STEEP	CHANNEL	NO	INLET (weir)

SUB. = Submerged, TW = Tail Water, Yc = Critical Depth

For type 1b, assuming that the culvert is full along its entire length: [9 p.D-11]

$$V^2 = \frac{H - D + SL}{\frac{K_e - 1}{2g} + \frac{n^2 L}{2.22 R^{4/3}}} \quad \text{and} \quad Q = A\,V \qquad \text{Eq. 20}$$

V = Average velocity of flow [ft/sec]
H = Head in [feet above inlet invert elevation]
D = Depth of flow [feet] (= culvert height)
S = Slope [rise/run]
L = Length [feet]
Ke = Entrance energy loss coefficient [Appendix E]
g = Gravitational constant
n = Manning's number (See Appendix C)
R = Hydraulic radius [feet]
A = Cross-sectional area [sq-feet]

Type 2b discharge is the same as type 1b except that the depth (D) is less than the culvert height. Under these conditions open channel flow exists and backwater calculations must be performed to precisely determine the depth. To reduce calculation time the depth is approximated by:

$$D = \frac{3}{4} H \qquad \text{Eq. 21}$$

Rather than directly determining whether type 1b or 2b flow exists, HydroCAD simply uses the lesser of this depth and the culvert height. This also insures continuity between the two flow conditions with the cross-over occurring when the head is 4/3 of the culvert height.

Types 1a and 2a are similar to types 1b and 2b, except for the tail water dependency. This is accommodated by substituting the tail water depth for D in the above equation.

Types 1c and 2c operate under inlet control and the discharge is determined with the orifice equations given previously. The orifice discharge coefficient is given by:

$$C_d = \frac{C_c}{1 + K_E} \qquad \text{Eq. 22}$$

Cc = Contraction coefficient (default is .90)

Note that for Ke = .5 this yields Cd = .6, which is the default discharge coefficient for a sharp-edged orifice.

The final determination of culvert discharge is made by calculating the type 1a/2a, 1b/2b *and* 1c/2c flows as described above. The least of these values (a, b, and c) is then used as the final discharge for a given head.

NOTE: The approximations used for culvert discharge have generally been found to provide sufficient accuracy for most hydrograph routing purposes. However, it is strongly recommended that the resulting stage-discharge curve be verified using independent culvert data. If a significant discrepancy is found the desired discharge data should be entered directly as a Special Outlet instead of using the built-in culvert equations.

Section 7 - POND ROUTING CALCULATIONS

Pond routing requires that the pond be characterized by two curves: the storage vs. elevation (stage-storage) and the discharge vs. elevation (stage-discharge).

The cumulative storage-storage curve may be entered directly, or HydroCAD can sum incremental storage values to determine the cumulative storage. The third option is to enter surface area and have HydroCAD calculate the storage as detailed in Appendix I. In any case, at least two points must be entered to permit interpolation by the program.

The stage-discharge curve is compiled by the program by summing the discharge curves for all specified outlet devices. The resulting curve consists of up to 101 elevations in steps that are a multiple of 1/10 foot. HydroCAD will automatically choose the interval and number of steps so as to cover the elevation range for which storage data is provided. At each elevation increment a composite discharge is determined by summing together the discharge from all outlet devices.

The discharge equations for each type of outlet device are given in the previous section. Any outlet device not directly provided by HydroCAD can be handled by entering its discharge vs. elevation data directly. This *special outlet* can be used in combination with other outlet devices, or used alone to represent the total discharge of the pond.

When using the special outlet data HydroCAD will interpolate between the elevations specified in order to obtain the discharge at each elevation interval. This permits the entry of discharge data at any known elevation, but may cause small discrepancies in the composite discharge curve, particularly when there are fewer than 100 points in the composite curve. This is easily verified by plotting the composite discharge curve and comparing it with the data which was entered.

After the storage and discharge curves have been determined the storage-indication method is used for routing the inflow hydrograph through a pond . This procedure is well described in [1 p.64-65] and will not be repeated here. Additional operations are performed by HydroCAD as follows:

1) Before routing begins, any base flow is added to the inflow hydrograph and any exfiltration is subtracted.

2) If a starting elevation is specified routing will begin with the water at this level. If this is above the lowest outlet device the pond will begin discharging immediately, possibly before any inflow has occurred. This will generally make the total outflow (as shown on the pond summary) greater than the inflow. On the other hand, if the starting elevation is below the lowest device the outflow will be less than the inflow due to the permanent detention of water.

3) If the range of the storage and discharge curves is exceeded HydroCAD will extrapolate from the last two points on each curve. If this fails due to a decreasing discharge curve the routing will be aborted and a warning message will be issued.

4) If the peak elevation exceeds the specified flood elevation a warning message will be issued but the routing will continue.

When using the storage-indication method keep in mind that it assumes zero velocity in the pond. This is an accurate assumption for most ponds where the storage volume is large in comparison to the inflow. However if the velocity approaching the outlet device(s) is significant then this method may *underestimate* the discharge and *overestimate* the peak elevation and storage of the pond.

Section 8 - LINK CALCULATIONS

The link is used to introduce an external hydrograph into the HydroCAD routing diagram. It may also be used to apply a flow threshold and/or scale factor as described below. The input hydrograph for a link may be supplied in one of three ways:

An automatic link imports a hydrograph directly from a structure in another HydroCAD project. The outflow of the specified structure is used as the inflow to the link. This capability is commonly used to interconnect portions of a project which have been divided into two or more separate diagrams.

A manual link is used to manually enter an arbitrary hydrograph. The hydrograph is defined by its starting time (T_0), interval between points (d_T), and up to 101 ordinates in CFS.

An import link is used to read a hydrograph from an ASCII text file. The file must contain the same information as a manual link, but in a more flexible format. If more than 101 ordinates are provided, adjacent points will automatically be averaged to reduce the final number within HydroCAD's 101-point capacity. For details on the required file structure see the sample file LINK_TST included with HydroCAD.

A link may also specify a flow threshold and/or scale factor. If a threshold is specified, only the portion of the hydrograph above (or below) the threshold is retained. The hydrograph is then multiplied by the specified percentage scale factor to produce the final outflow.

These adjustments provide considerable flexibility in performing special hydrograph operations, such as splitting a hydrograph into two components. To achieve such a *diversion*, the hydrograph to be split would usually be brought into *two* separate links. One link could retain the flow above a diversion threshold, and the other could retain the flow below the threshold. More than two links, or a scale factor, could also be used to model more complex situations.

Section 9 - HYDROGRAPH PEAK AND VOLUME CALCULATIONS

The peak flow for each hydrograph is calculated by the program using the three highest points on the hydrograph.[3] A parabola is fitted to these points and the apex of the parabola gives the true peak. This eliminates variations in the "peak" which would occur if only a single point were considered. This improvement in accuracy is most pronounced with a narrow peak where the two closest points fall on either side of the peak and may be several percent below the actual peak.

The peak attenuation caused by a reach or pond is calculated from the peak values obtained from the inflow and outflow hydrographs.

The time of peak is determined by the same parabolic fit to the three highest points. The apex of the parabola establishes a time of peak with far greater resolution than the time between points. Like the peak flow, this value is not effected by the placement of the points on the "true" curve.

The time lag caused by a reach or pond is simply the difference between the time of peak obtained from the inflow and outflow hydrographs.

The hydrograph volume is determined by integrating the flow over the entire time span of the hydrograph. Since the hydrograph points represent the average over each interval (rather than the instantaneous flow) the integration can be done simply by summing all the points, multiplying by the time interval, and converting to acre-feet.

Since the volume can only be determined within the time limits of the hydrograph, any flow before or after the calculation period will be excluded. Since the outflow of a reach or pond lags the inflow this can cause an apparent discrepancy between the total inflow and outflow. Either situation can be remedied by increasing the calculation period to include the entire inflow and outflow hydrograph.

When inflow hydrographs are added with the same starting time (To) and time interval (dT) the ordinates are at matching times and are added directly. If the hydrographs differ as to To or dT such direct addition is not possible. This can occur when using a link to introduce a hydrograph with a different starting time or time interval. In this case the resulting hydrograph will span the combined time period of both inflows and will have a larger dT as required to cover this period with the available number of points (101). Since the inflow ordinates now occur at different times HydroCAD will interpolate between the points of each inflow when performing the summation.

[3] HydroCAD also checks for flat-topped hydrographs, where curve fitting and extrapolation are not appropriate.

REFERENCES

The following references contain additional information on the hydrology and hydraulics utilized by HydroCAD. These publications are referred to by number throughout this manual and are listed in approximate order of usage.

[1] McCuen, Richard H. A Guide to Hydrologic Analysis Using SCS Methods Prentice Hall, 1982.

[2] Soil Conservation Service Technical Release Number 20 (TR-20) National Technical Information Service, 1982.

[3] Smith, P.D. Basic Hydraulics Butterworth Scientific, 1982.

[4] Sharp, J.J. & Sawden, P. Basic Hydrology Butterworth Scientific, 1984.

[5] King, H.W. & Brater, E.F. Handbook of Hydraulics McGraw Hill, 1963.

[6] Simon, Andrew Practical Hydraulics John Wiley & Sons, 1981.

[7] Chow, Ven Te Open Channel Hydraulics McGraw Hill, 1959.

[8] Merrit, Frederick Standard Handbook for Civil Engineers

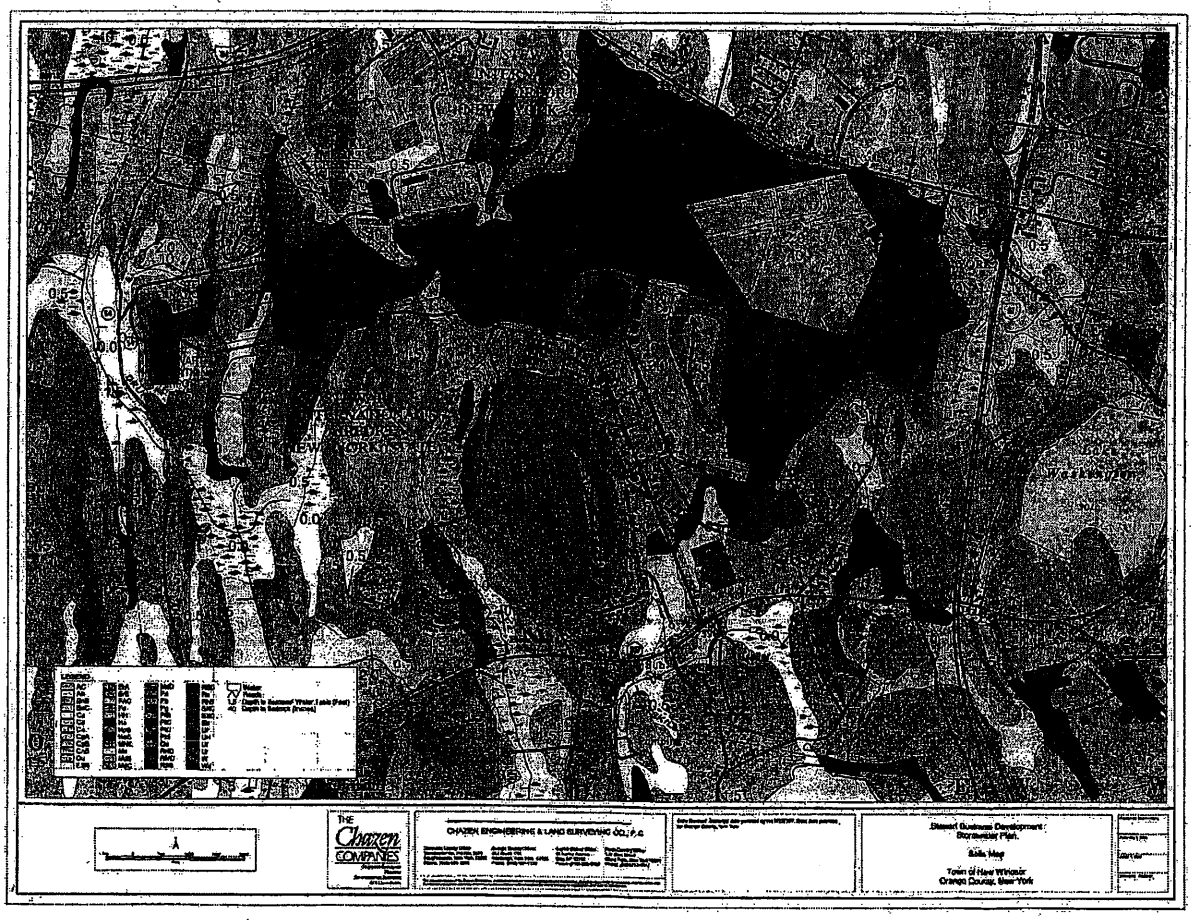
[9] Jerome M. Norman et al Culverts - Hydrology & Hydraulics Lehigh University, 1980.

[10] Soil Conservation Service National Engineering Handbook Section 4 - Hydrology, 1985.

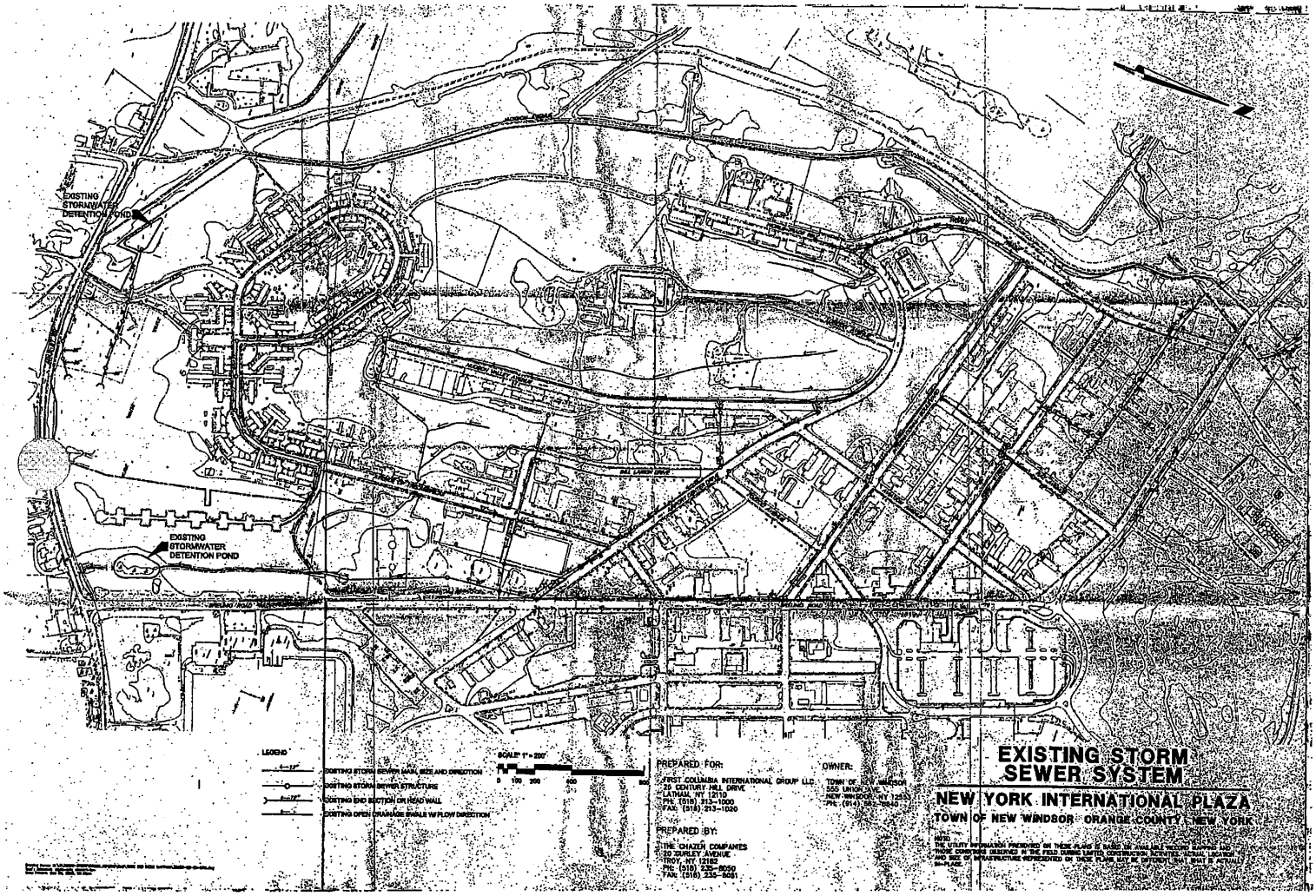
[11] Soil Conservation Service Technical Release Number 55 (TR-55), 1986.

[12] American Concrete Pipe Association Concrete Pipe Handbook, 1981.

Appendix B:
Site Soils Map

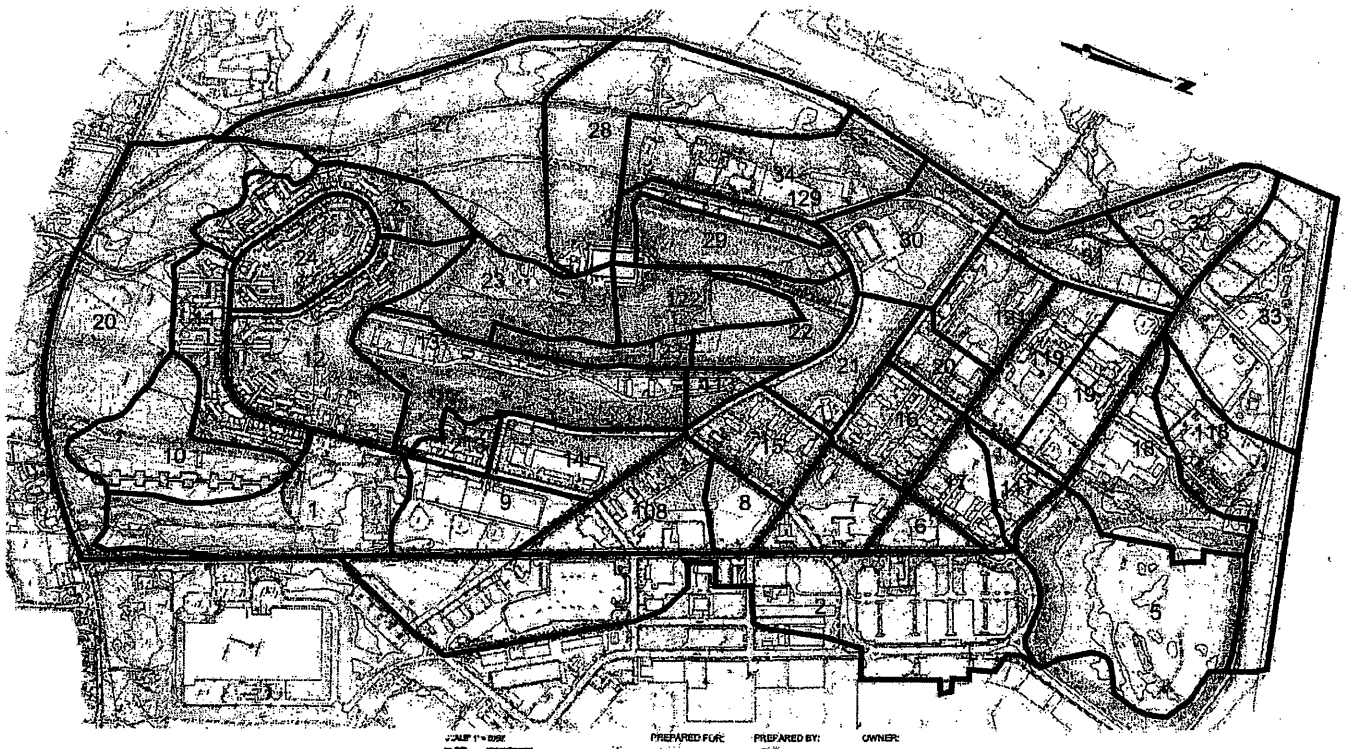

THE
Chazen
COMPANIES
CHAZEN ENGINEERING & LAND SURVEYING CO., P.C.
Site Map
Town of New Windsor
Orange County, New York

Appendix C:
Existing Drainage Conditions


EXISTING STORMWATER DETENTION POND
EXISTING STORMWATER DETENTION POND
LEGEND
EXISTING STORM SEWER MAIN, SIZE AND DIRECTION
EXISTING STORM SEWER STRUCTURE
EXISTING END SECTION OR HEAD WALL
EXISTING OPEN DRAINAGE SWALE W/ FLOW DIRECTION
SCALE: 1" = 200'
0 100 200 400 800
PREPARED FOR:
FIRST COLUMBIA INTERNATIONAL GROUP LLC
25 CENTURY HILL DRIVE
LATHAM, NY 12110
PH: (518) 213-1000
FAX: (518) 213-1020
PREPARED BY:
THE CHAZEN COMPANIES
20 GURLEY AVENUE
TROY, NY 12182
PH: (518) 235-8050
FAX: (518) 235-8051
OWNER:
TOWN OF NEW WINDSOR
555 UNION AVE.
NEW WINDSOR, NY 12553
PH: (914) 562-8640
EXISTING STORM SEWER SYSTEM
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR ORANGE COUNTY, NEW YORK
NOTE:
THE UTILITY INFORMATION PRESENTED ON THESE PLANS IS BASED ON AVAILABLE RECORD MAPPING AND THOSE CONDITIONS OBSERVED IN THE FIELD DURING LIMITED CONSTRUCTION ACTIVITIES. ACTUAL LOCATION AND SIZE OF INFRASTRUCTURE REPRESENTED ON THESE PLANS MAY BE DIFFERENT THAT SHAT IS ACTUALLY IN-PLACE.

Existing Storm Sewer Plan

Existing Watershed Mapping



SCALE 1" = 200'

PREPARED FOR:

FIRST COLUMBIA

PREPARED BY:

THE Chazen COMPANIES

OWNER:

TOWN OF NEW WINDSOR
555 UNION AVE.
NEW WINDSOR, NY 12553
PH: (914) 563-4640

DEVELOPER:

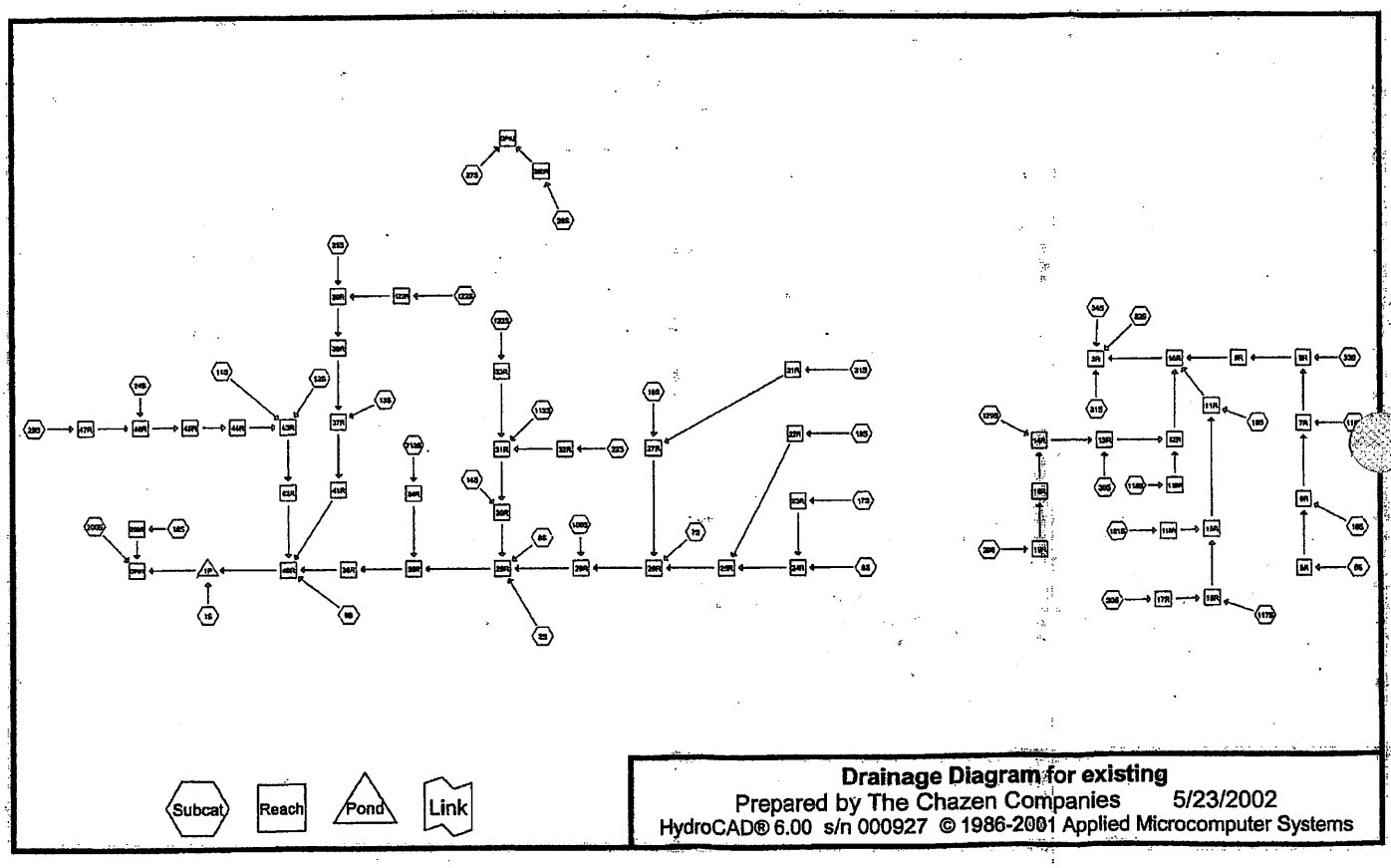
FIRST COLUMBIA L.L.C.
28 CENTURY HILL DR.
LATHAM, NY 12110
PH: (518) 213-1000
FAX: (518) 213-1020

EXISTING CONDITIONS WATERSHED PLAN

NEW YORK INTERNATIONAL PLAZA

TOWN OF NEW WINDSOR ORANGE COUNTY NEW YORK

Existing HydroCAD Model Results



Drainage Diagram for existing
Prepared by The Chazen Companies 5/23/2002
HydroCAD® 6.00 s/n 000927 © 1986-2001 Applied Microcomputer Systems

2-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.50"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=6.7 min CN=80 Area=17.900 ac Runoff= 32.88 cfs 2.260 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 69.53 cfs 8.695 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 14.55 cfs 2.167 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 6.63 cfs 0.512 af

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD
Tc=9.3 min CN=84 Area=7.400 ac Runoff= 14.76 cfs 1.112 af

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI
Tc=17.4 min CN=84 Area=10.060 ac Runoff= 16.23 cfs 1.508 af

Subcatchment 9S: AREA NORTH OF D-POND
Tc=11.6 min CN=84 Area=9.870 ac Runoff= 18.52 cfs 1.482 af

Subcatchment 10S: area near trailer road
Tc=17.1 min CN=76 Area=12.620 ac Runoff= 14.04 cfs 1.314 af

Subcatchment 11S: AREA JUST BELOW LOOP ROAD
Tc=25.7 min CN=85 Area=8.940 ac Runoff= 12.79 cfs 1.394 af

Subcatchment 12S: AREA WEST OF LOOP ROAD
Tc=35.1 min CN=77 Area=18.730 ac Runoff= 16.14 cfs 2.032 af

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=17.9 min CN=77 Area=18.780 ac Runoff= 21.67 cfs 2.052 af

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY
Tc=17.0 min CN=86 Area=7.960 ac Runoff= 14.02 cfs 1.298 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI
Tc=13.7 min CN=86 Area=7.350 ac Runoff= 14.05 cfs 1.199 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST
Tc=10.9 min CN=84 Area=7.210 ac Runoff= 13.80 cfs 1.083 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 6.25 cfs 0.580 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 17.22 cfs 1.667 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 9.54 cfs 1.339 af

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ
Tc=3.7 min CN=86 Area=4.090 ac Runoff= 10.68 cfs 0.670 af

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD
Tc=18.3 min CN=78 Area=6.950 ac Runoff= 8.37 cfs 0.796 af

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=3.3 min CN=74 Area=7.660 ac Runoff= 11.59 cfs 0.725 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=11.600 ac Runoff= 11.33 cfs 0.985 af

Subcatchment 24S: AREA AROUND LOOP ROAD
Tc=7.7 min CN=79 Area=8.574 ac Runoff= 14.52 cfs 1.034 af

Subcatchment 25S: AREA NEAR LOOP ROAD
Tc=22.7 min CN=79 Area=9.300 ac Runoff= 10.75 cfs 1.115 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=28.7 min CN=72 Area=28.190 ac Runoff= 20.10 cfs 2.376 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=29.4 min CN=73 Area=22.860 ac Runoff= 17.13 cfs 2.032 af

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE
Tc=17.0 min CN=72 Area=8.060 ac Runoff= 7.13 cfs 0.683 af

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE
Tc=15.1 min CN=81 Area=11.600 ac Runoff= 17.38 cfs 1.527 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 9.03 cfs 0.900 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 6.86 cfs 0.905 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 29.83 cfs 3.434 af

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE
Tc=22.6 min CN=78 Area=16.360 ac Runoff= 18.03 cfs 1.871 af

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8
Tc=13.3 min CN=78 Area=3.640 ac Runoff= 4.94 cfs 0.418 af

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD
Tc=17.8 min CN=81 Area=2.210 ac Runoff= 3.10 cfs 0.291 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 7.72 cfs 0.649 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 19.03 cfs 1.660 af

Subcatchment 119S:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 11.77 cfs 1.260 af

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD
Tc=20.5 min CN=74 Area=7.280 ac Runoff= 6.74 cfs 0.684 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=10.8 min CN=72 Area=8.090 ac Runoff= 8.46 cfs 0.687 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=8.1 min CN=72 Area=3.810 ac Runoff= 4.28 cfs 0.324 af

Subcatchment 129S: AIRPORT CENTER DRIVE
Tc=16.4 min CN=82 Area=3.970 ac Runoff= 6.01 cfs 0.546 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=73 Area=31.060 ac Runoff= 20.52 cfs 2.749 af

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE
Tc=12.6 min CN=80 Area=2.690 ac Runoff= 4.09 cfs 0.339 af

Reach 3R: DP3 Inflow= 151.97 cfs 19.852 af
Length= 50.0' Max Vel= 5.8 fps Capacity= 1,521.75 cfs Outflow= 151.88 cfs 19.846 af

Reach 5R: Inflow= 14.55 cfs 2.167 af
Length= 570.0' Max Vel= 7.0 fps Capacity= 60.37 cfs Outflow= 14.51 cfs 2.162 af

Reach 6R: Inflow= 23.28 cfs 3.829 af
Length= 350.0' Max Vel= 1.9 fps Capacity= 148.76 cfs Outflow= 23.24 cfs 3.812 af

Reach 7R: Inflow= 36.01 cfs 5.472 af
Length= 220.0' Max Vel= 3.6 fps Capacity= 504.53 cfs Outflow= 35.92 cfs 5.464 af

Reach 8R: Inflow= 65.65 cfs 8.898 af
Length= 45.0' Max Vel= 10.3 fps Capacity= 217.33 cfs Outflow= 65.64 cfs 8.897 af

Reach 9R: Inflow= 65.64 cfs 8.897 af
Length= 290.0' Max Vel= 3.5 fps Capacity= 278.93 cfs Outflow= 65.29 cfs 8.880 af

Reach 10R: Inflow= 121.67 cfs 16.203 af
Length= 280.0' Max Vel= 4.1 fps Capacity= 316.14 cfs Outflow= 121.16 cfs 16.176 af

Reach 11R: Inflow= 23.37 cfs 3.338 af
Length= 670.0' Max Vel= 9.9 fps Capacity= 27.71 cfs Outflow= 23.33 cfs 3.333 af

Reach 12R: Inflow= 34.99 cfs 3.992 af
Length= 213.0' Max Vel= 12.0 fps Capacity= 56.21 cfs Outflow= 34.78 cfs 3.991 af

Reach 13R: Inflow= 24.04 cfs 2.742 af
Length= 1,205.0' Max Vel= 10.1 fps Capacity= 28.43 cfs Outflow= 23.62 cfs 2.734 af

Reach 14R: Inflow= 8.11 cfs 1.217 af
Length= 703.0' Max Vel= 9.9 fps Capacity= 18.04 cfs Outflow= 8.04 cfs 1.215 af

Reach 15R: Inflow= 17.69 cfs 1.999 af
Length= 22.0' Max Vel= 9.3 fps Capacity= 27.71 cfs Outflow= 17.68 cfs 1.999 af

Reach 16R: Inflow= 11.85 cfs 1.317 af
Length= 390.0' Max Vel= 7.3 fps Capacity= 22.62 cfs Outflow= 11.74 cfs 1.316 af

Reach 17R: Inflow= 10.68 cfs 0.670 af
Length= 465.0' Max Vel= 6.0 fps Capacity= 4.13 cfs Outflow= 4.24 cfs 0.669 af

Reach 18R: Inflow= 5.93 cfs 0.671 af
Length= 200.0' Max Vel= 5.4 fps Capacity= 3.76 cfs Outflow= 4.07 cfs 0.671 af

Reach 19R: Inflow= 7.13 cfs 0.683 af
Length= 1,250.0' Max Vel= 2.1 fps Capacity= 234.10 cfs Outflow= 5.93 cfs 0.671 af

Reach 21R: Inflow= 8.37 cfs 0.796 af
Length= 640.0' Max Vel= 7.1 fps Capacity= 4.93 cfs Outflow= 5.04 cfs 0.795 af

Reach 22R: Inflow= 13.80 cfs 1.083 af
Length= 396.0' Max Vel= 5.9 fps Capacity= 9.17 cfs Outflow= 9.17 cfs 1.082 af

Reach 23R: Inflow= 6.25 cfs 0.580 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 5.72 cfs 0.579 af

Reach 24R: Inflow= 11.31 cfs 1.091 af
Length= 80.0' Max Vel= 5.0 fps Capacity= 3.49 cfs Outflow= 3.69 cfs 1.091 af

Reach 25R: Inflow= 12.66 cfs 2.173 af
Length= 300.0' Max Vel= 4.3 fps Capacity= 11.72 cfs Outflow= 12.63 cfs 2.170 af

Reach 26R: Inflow= 38.70 cfs 5.273 af
Length= 550.0' Max Vel= 4.3 fps Capacity= 18.31 cfs Outflow= 18.37 cfs 5.261 af

Reach 27R: Inflow= 18.96 cfs 1.994 af
Length= 360.0' Max Vel= 5.5 fps Capacity= 11.86 cfs Outflow= 11.86 cfs 1.991 af

Reach 28R: Inflow= 23.25 cfs 5.679 af
Length= 1,330.0' Max Vel= 4.6 fps Capacity= 29.20 cfs Outflow= 22.73 cfs 5.647 af

Reach 29R: Inflow= 128.05 cfs 18.475 af
Length= 212.0' Max Vel= 15.0 fps Capacity= 308.26 cfs Outflow= 127.77 cfs 18.469 af

Reach 30R: Inflow= 26.57 cfs 2.633 af
Length= 628.0' Max Vel= 5.1 fps Capacity= 28.01 cfs Outflow= 26.09 cfs 2.625 af

Reach 31R: Inflow= 12.78 cfs 1.339 af
Length= 1,009.0' Max Vel= 9.3 fps Capacity= 14.69 cfs Outflow= 12.55 cfs 1.335 af

Reach 32R: Inflow= 11.59 cfs 0.725 af
Length= 300.0' Max Vel= 8.6 fps Capacity= 5.93 cfs Outflow= 6.13 cfs 0.725 af

Reach 33R: Inflow= 4.28 cfs 0.324 af
Length= 325.0' Max Vel= 11.2 fps Capacity= 8.90 cfs Outflow= 4.24 cfs 0.324 af

Reach 34R: Inflow= 4.09 cfs 0.339 af
Length= 392.0' Max Vel= 3.2 fps Capacity= 5.03 cfs Outflow= 3.95 cfs 0.338 af

Reach 35R: Inflow= 131.00 cfs 18.807 af
Length= 473.0' Max Vel= 15.0 fps Capacity= 308.11 cfs Outflow= 130.60 cfs 18.795 af

Reach 36R: Inflow= 130.60 cfs 18.795 af
Length= 377.0' Max Vel= 15.0 fps Capacity= 308.22 cfs Outflow= 130.44 cfs 18.784 af

Reach 37R: Inflow= 34.13 cfs 3.699 af
Length= 65.0' Max Vel= 13.5 fps Capacity= 165.55 cfs Outflow= 34.09 cfs 3.699 af

Reach 38R: SWALE Inflow= 13.07 cfs 1.653 af
Length= 690.0' Max Vel= 6.2 fps Capacity= 301.56 cfs Outflow= 12.96 cfs 1.647 af

Reach 39R: Inflow= 13.11 cfs 1.654 af
Length= 255.0' Max Vel= 10.5 fps Capacity= 109.70 cfs Outflow= 13.07 cfs 1.653 af

Reach 40R: CHANNEL Inflow= 217.46 cfs 29.488 af
Length= 820.0' Max Vel= 5.9 fps Capacity= 539.62 cfs Outflow= 216.08 cfs 29.394 af

Reach 41R: SWALE Inflow= 34.09 cfs 3.699 af
Length= 890.0' Max Vel= 3.7 fps Capacity= 570.88 cfs Outflow= 32.67 cfs 3.671 af

Reach 42R: SWALE Inflow= 45.31 cfs 5.564 af
Length= 350.0' Max Vel= 3.7 fps Capacity= 237.55 cfs Outflow= 45.07 cfs 5.550 af

Reach 43R: Inflow= 45.35 cfs 5.565 af
Length= 255.0' Max Vel= 22.3 fps Capacity= 296.25 cfs Outflow= 45.31 cfs 5.564 af

Reach 44R: Inflow= 19.83 cfs 2.144 af
Length= 467.0' Max Vel= 5.3 fps Capacity= 36.45 cfs Outflow= 19.34 cfs 2.139 af

Reach 45R: Inflow= 19.92 cfs 2.145 af
Length= 126.0' Max Vel= 7.2 fps Capacity= 34.38 cfs Outflow= 19.83 cfs 2.144 af

Reach 46R: Inflow= 19.97 cfs 2.147 af
Length= 377.0' Max Vel= 10.2 fps Capacity= 40.58 cfs Outflow= 19.92 cfs 2.145 af

Reach 47R: Inflow= 10.75 cfs 1.115 af
Length= 200.0' Max Vel= 4.9 fps Capacity= 14.00 cfs Outflow= 10.70 cfs 1.114 af

Reach 118R: Inflow= 6.74 cfs 0.684 af
Length= 400.0' Max Vel= 9.1 fps Capacity= 17.16 cfs Outflow= 6.69 cfs 0.684 af

Reach 119R: Inflow= 11.77 cfs 1.260 af
Length= 461.0' Max Vel= 8.5 fps Capacity= 27.72 cfs Outflow= 11.71 cfs 1.259 af

Reach 122R: Inflow= 8.46 cfs 0.687 af
Length= 1,462.0' Max Vel= 2.1 fps Capacity= 263.47 cfs Outflow= 6.28 cfs 0.670 af

Reach 200R: Inflow= 14.04 cfs 1.314 af
Length= 650.0' Max Vel= 3.6 fps Capacity= 95.83 cfs Outflow= 13.68 cfs 1.307 af

Reach 280R: Inflow= 17.13 cfs 2.032 af
Length= 985.0' Max Vel= 2.1 fps Capacity= 711.78 cfs Outflow= 16.07 cfs 2.000 af

Reach DP#1: (new node) Inflow= 252.23 cfs 35.548 af
Outflow= 252.23 cfs 35.548 af

Reach DP#2: DESIGN POINT #2 Inflow= 32.95 cfs 4.375 af
Outflow= 32.95 cfs 4.375 af

Pond 1P: EXISTING POND Peak Storage= 53,438 cf Inflow= 226.27 cfs 31.654 af
Primary= 221.58 cfs 31.492 af Outflow= 221.58 cfs 31.492 af

Runoff Area = 485.774 ac Volume = 60.354 af Average Depth = 1.49"

Subcatchment 1S: AREA NEAR POND

Runoff = 32.88 cfs @ 12.10 hrs, Volume= 2.260 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
10.120	77	Woods, Good, HSG D
1.540	98	Paved parking & roofs
6.240	80	Pasture/grassland/range, Good, HSG D
17.900	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0244	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.4	260	0.0244	3.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	86	0.0488	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	890	0.0150	5.1	102.83	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
6.7	1,386	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 69.53 cfs @ 12.45 hrs, Volume= 8.695 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 14.55 cfs @ 12.69 hrs, Volume= 2.167 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 6.63 cfs @ 12.14 hrs, Volume= 0.512 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD

Runoff = 14.76 cfs @ 12.13 hrs, Volume= 1.112 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.400	74	Pasture/grassland/range, Good, HSG C
3.000	98	Paved parking & roofs
7.400	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	30	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.5	395	0.0730	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	60	0.0330	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
4.5	252	0.0179	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0143	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	800	Total			

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI

Runoff = 16.23 cfs @ 12.24 hrs, Volume= 1.508 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
5.060	98	Paved parking & roofs
5.000	70	Woods, Good, HSG C
10.060	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	150	0.1316	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.5	78	0.1316	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	357	0.0112	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	585	Total			

Subcatchment 9S: AREA NORTH OF D-POND

Runoff = 18.52 cfs @ 12.16 hrs, Volume= 1.482 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.190	98	Paved parking & roofs
5.680	74	Pasture/grassland/range, Good, HSG C
9.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	150	0.0117	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	150	0.0117	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.5	252	0.0050	0.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.6	552	Total			

Subcatchment 10S: area near trailer road

Runoff = 14.04 cfs @ 12.25 hrs, Volume= 1.314 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.000	70	Woods, Good, HSG C
6.090	77	Woods, Good, HSG D
1.130	74	Pasture/grassland/range, Good, HSG C
0.430	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
12.620	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	150	0.1200	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.1	360	0.0556	1.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	60	0.2333	2.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
17.1	1,135	Total			

Subcatchment 11S: AREA JUST BELOW LOOP ROAD

Runoff = 12.79 cfs @ 12.36 hrs, Volume= 1.394 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.210	98	Paved parking & roofs
4.480	74	Pasture/grassland/range, Good, HSG C
0.250	70	Woods, Good, HSG C
8.940	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	150	0.0153	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.3	40	0.0153	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
1.9	200	0.0015	1.7	5.42	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.021
0.6	377	0.0448	10.2	40.58	**Circular Channel (pipe),** Diam= 27.0" Area= 4.0 sf Perim= 7.1' r= 0.56' n= 0.021
0.3	126	0.0183	7.0	34.35	**Circular Channel (pipe),** Diam= 30.0" Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.021
1.5	467	0.0078	5.2	36.47	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
25.7	1,400	Total			

Subcatchment 12S: AREA WEST OF LOOP ROAD

Runoff = 16.14 cfs @ 12.51 hrs, Volume= 2.032 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
6.740	74	Pasture/grassland/range, Good, HSG C
7.940	70	Woods, Good, HSG C
4.050	98	Paved parking & roofs
18.730	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0933	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.2	544	0.0846	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.5	488	0.0861	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	272	0.0411	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	278	0.0791	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1	582	0.0137	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
35.1	2,314	Total			

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 21.67 cfs @ 12.26 hrs, Volume= 2.052 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
7.160	70	Woods, Good, HSG C
3.300	98	Paved parking & roofs
8.320	74	Pasture/grassland/range, Good, HSG C
18.780	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	30	0.2667	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
10.9	120	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.0	190	0.2211	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	1,804	0.0277	7.2	157.55	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=2.00' Z= 3.0 '/' n= 0.040
17.9	2,144	Total			

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY

Runoff = 14.02 cfs @ 12.23 hrs, Volume= 1.298 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
0.260	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
4.080	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	130	0.0308	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.9	220	0.0364	3.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	642	0.0122	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	275	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	619	0.0030	1.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.0	1,886	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI

Runoff = 14.05 cfs @ 12.19 hrs, Volume= 1.199 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.760	74	Pasture/grassland/range, Good, HSG C
3.590	98	Paved parking & roofs
7.350	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0320	1.5		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
5.4	100	0.0797	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.0	470	0.0797	2.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.5	400	0.0725	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0600	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.7	1,070	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST

Runoff = 13.80 cfs @ 12.16 hrs, Volume= 1.083 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.340	74	Pasture/grassland/range, Good, HSG C
2.870	98	Paved parking & roofs
7.210	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	52	0.0310	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.50"
5.6	98	0.0695	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.2	138	0.0695	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	275	0.0580	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	285	0.0910	11.2	112.49	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=2.00' Z= 2.0 '/' n= 0.040
10.9	923	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 6.25 cfs @ 12.24 hrs, Volume= 0.580 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 17.22 cfs @ 12.27 hrs, Volume= 1.667 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 9.54 cfs @ 12.61 hrs, Volume= 1.339 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ

Runoff = 10.68 cfs @ 12.06 hrs, Volume= 0.670 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.810	74	Pasture/grassland/range, Good, HSG C
0.220	70	Woods, Good, HSG C
2.060	98	Paved parking & roofs
4.090	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0267	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	175	0.0457	4.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	475	0.0589	4.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	800	Total			

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD

Runoff = 8.37 cfs @ 12.26 hrs, Volume= 0.796 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
5.070	74	Pasture/grassland/range, Good, HSG C
0.710	70	Woods, Good, HSG C
1.170	98	Paved parking & roofs
6.950	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.9	430	0.1256	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.1500	2.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	164	0.0488	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.3	824	Total			

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 11.59 cfs @ 12.06 hrs, Volume= 0.725 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
2.990	74	Pasture/grassland/range, Good, HSG C
3.900	70	Woods, Good, HSG C
0.770	98	Paved parking & roofs
7.660	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0780	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	670	0.0780	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	536	0.0597	23.6	189.13	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 5.0 '/' n= 0.011
3.3	1,356	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 11.33 cfs @ 12.20 hrs, Volume= 0.985 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
2.360	74	Pasture/grassland/range, Good, HSG C
8.700	70	Woods, Good, HSG C
0.540	98	Paved parking & roofs
11.600	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: AREA AROUND LOOP ROAD

Runoff = 14.52 cfs @ 12.12 hrs, Volume= 1.034 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
6.660	74	Pasture/grassland/range, Good, HSG C
0.084	70	Woods, Good, HSG C
1.830	98	Paved parking & roofs
8.574	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0580	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	84	0.0238	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	204	0.0392	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	128	0.1250	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	240	0.0500	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	70	0.0286	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	876	Total			

Subcatchment 25S: AREA NEAR LOOP ROAD

Runoff = 10.75 cfs @ 12.33 hrs, Volume= 1.115 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.380	74	Pasture/grassland/range, Good, HSG C
2.460	70	Woods, Good, HSG C
2.460	98	Paved parking & roofs
9.300	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	258	0.1938	2.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	190	0.1158	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	202	0.0100	2.8	2.21	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.021
1.6	309	0.0100	3.3	4.00	**Circular Channel (pipe),** Diam= 15.0" Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.021
1.6	358	0.0100	3.7	6.50	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.021
0.5	164	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
22.7	1,631	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 20.10 cfs @ 12.44 hrs, Volume= 2.376 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
20.860	70	Woods, Good, HSG C
0.560	87	Dirt roads, HSG C
6.340	74	Pasture/grassland/range, Good, HSG C
0.430	98	Paved parking & roofs
28.190	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.3	410	0.1756	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	327	0.1407	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	389	0.1131	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.1	985	0.0081	4.0	160.60	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
28.7	2,261	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 17.13 cfs @ 12.44 hrs, Volume= 2.032 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
15.100	70	Woods, Good, HSG C
6.110	74	Pasture/grassland/range, Good, HSG C
1.380	98	Paved parking & roofs
0.270	87	Dirt roads, HSG C
22.860	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	150	0.0133	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.4	38	0.0526	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.5143	3.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	370	0.1514	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	276	0.0435	3.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.0	315	0.1397	2.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
29.4	1,184	Total			

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE

Runoff = 7.13 cfs @ 12.26 hrs, Volume= 0.683 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.960	74	Pasture/grassland/range, Good, HSG C
5.890	70	Woods, Good, HSG C
0.210	98	Paved parking & roofs
8.060	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	36	0.0556	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.3	34	0.5294	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.1	80	0.2667	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	96	0.1563	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,250	0.0194	5.4	130.05	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 5.0 '/' n= 0.040
17.0	1,496	Total			

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE

Runoff = 17.38 cfs @ 12.21 hrs, Volume= 1.527 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
6.180	74	Pasture/grassland/range, Good, HSG C
1.600	70	Woods, Good, HSG C
3.820	98	Paved parking & roofs
11.600	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	115	0.0348	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.4	207	0.1159	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	53	0.2642	2.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	467	0.0557	6.6	52.81	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.00' Z= 4.0 '/' n= 0.040
15.1	842	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 9.03 cfs @ 12.30 hrs, Volume= 0.900 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 6.86 cfs @ 12.56 hrs, Volume= 0.905 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 29.83 cfs @ 12.40 hrs, Volume= 3.434 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE

Runoff = 18.03 cfs @ 12.33 hrs, Volume= 1.871 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
5.810	70	Woods, Good, HSG C
3.740	98	Paved parking & roofs
6.790	74	Pasture/grassland/range, Good, HSG C
16.360	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	150	0.1129	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.9	293	0.1129	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	1,367	0.0432	9.0	325.61	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=2.00' Z= 5.0 '/' n= 0.040
3.0	1,302	0.0292	7.1	428.98	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 10.0 '/' n= 0.040
22.6	3,112	Total			

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8

Runoff = 4.94 cfs @ 12.19 hrs, Volume= 0.418 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
2.960	74	Pasture/grassland/range, Good, HSG C
0.680	98	Paved parking & roofs
3.640	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0767	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	241	0.0767	5.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	477	0.0126	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	583	0.0034	1.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.3	1,451	Total			

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD

Runoff = 3.10 cfs @ 12.25 hrs, Volume= 0.291 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
0.690	98	Paved parking & roofs
1.520	74	Pasture/grassland/range, Good, HSG C
2.210	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.9	272	0.0662	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	470	0.0638	5.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.8	892	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 7.72 cfs @ 12.19 hrs, Volume= 0.649 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 19.03 cfs @ 12.21 hrs, Volume= 1.660 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119S:

Runoff = 11.77 cfs @ 12.34 hrs, Volume= 1.260 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD

Runoff = 6.74 cfs @ 12.31 hrs, Volume= 0.684 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.470	74	Pasture/grassland/range, Good, HSG C
2.430	70	Woods, Good, HSG C
0.380	98	Paved parking & roofs
7.280	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.1	311	0.0643	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	153	0.0915	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	28	0.3571	4.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0116	4.2	84.32	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.040
20.5	714	Total			

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL

Runoff = 8.46 cfs @ 12.16 hrs, Volume= 0.687 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.490	74	Pasture/grassland/range, Good, HSG C
0.200	87	Dirt roads, HSG C
6.250	70	Woods, Good, HSG C
0.150	98	Paved parking & roofs
8.090	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	150	0.0566	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	239	0.0566	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.0	603	0.0829	1.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	1,062	0.0100	9.5	56.73	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 4.0 '/' n= 0.011
10.8	2,054	Total			

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD

Runoff = 4.28 cfs @ 12.13 hrs, Volume= 0.324 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.220	74	Pasture/grassland/range, Good, HSG C
0.047	87	Dirt roads, HSG C
2.530	70	Woods, Good, HSG C
0.013	98	Paved parking & roofs
3.810	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	95	0.2947	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	1,165	0.0100	14.2	284.67	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.011
8.1	1,260	Total			

Subcatchment 129S: AIRPORT CENTER DRIVE

Runoff = 6.01 cfs @ 12.23 hrs, Volume= 0.546 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
2.000	74	Pasture/grassland/range, Good, HSG C
0.490	70	Woods, Good, HSG C
1.480	98	Paved parking & roofs
3.970	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.2076	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	270	0.2076	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.0	980	0.0132	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.4	1,400	Total			

Subcatchment 200S: area along 207

Runoff = 20.52 cfs @ 12.58 hrs, Volume= 2.749 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.820	77	Woods, Good, HSG D
0.860	80	Pasture/grassland/range, Good, HSG D
21.050	70	Woods, Good, HSG C
5.230	74	Pasture/grassland/range, Good, HSG C
2.100	98	Paved parking & roofs
31.060	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0273	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.6	326	0.0273	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	1,680	0.0214	5.8	92.22	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
1.8	650	0.0231	6.0	95.81	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
38.4	2,806	Total			

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE

Runoff = 4.09 cfs @ 12.18 hrs, Volume= 0.339 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
0.620	70	Woods, Good, HSG C
1.280	74	Pasture/grassland/range, Good, HSG C
2.690	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.2	26	0.5350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.5	387	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.6	513	Total			

Reach 3R: DP3

Inflow = 151.97 cfs @ 12.41 hrs, Volume= 19.852 af
Outflow = 151.88 cfs @ 12.42 hrs, Volume= 19.846 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.8 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.31'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 5R:

Inflow = 14.55 cfs @ 12.69 hrs, Volume= 2.167 af
Outflow = 14.51 cfs @ 12.73 hrs, Volume= 2.162 af, Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.0 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 2.5 min

Peak Depth= 1.00'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow = 23.28 cfs @ 12.48 hrs, Volume= 3.829 af
Outflow = 23.24 cfs @ 12.55 hrs, Volume= 3.812 af, Atten= 0%, Lag= 4.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.9 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 5.8 min

Peak Depth= 1.62'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow	=	36.01 cfs @	12.34 hrs, Volume=	5.472 af	
Outflow	=	35.92 cfs @	12.37 hrs, Volume=	5.464 af, Atten= 0%, Lag= 1.8 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.35'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow	=	65.65 cfs @	12.39 hrs, Volume=	8.898 af	
Outflow	=	65.64 cfs @	12.39 hrs, Volume=	8.897 af, Atten= 0%, Lag= 0.1 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.3 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.3 fps, Avg. Travel Time= 0.2 min

Peak Depth= 1.59'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow	=	65.64 cfs @	12.39 hrs, Volume=	8.897 af	
Outflow	=	65.29 cfs @	12.44 hrs, Volume=	8.880 af, Atten= 1%, Lag= 2.6 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.5 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 2.9 min

Peak Depth= 2.20'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow	=	121.67 cfs @	12.40 hrs, Volume=	16.203 af	
Outflow	=	121.16 cfs @	12.43 hrs, Volume=	16.176 af, Atten= 0%, Lag= 2.1 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.1 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 2.5 min

Peak Depth= 2.53'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow	=	23.37 cfs @	12.35 hrs, Volume=	3.338 af	
Outflow	=	23.33 cfs @	12.39 hrs, Volume=	3.333 af,	Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.9 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 2.3 min

Peak Depth= 1.41'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R:

Inflow	=	34.99 cfs @	12.32 hrs, Volume=	3.992 af	
Outflow	=	34.78 cfs @	12.33 hrs, Volume=	3.991 af,	Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.0 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 0.7 min

Peak Depth= 1.43'
Capacity at bank full= 56.21 cfs
30.0" Diameter Pipe n= 0.021 Length= 213.0' Slope= 0.0490 '/'

Reach 13R:

Inflow	=	24.04 cfs @	12.24 hrs, Volume=	2.742 af	
Outflow	=	23.62 cfs @	12.31 hrs, Volume=	2.734 af,	Atten= 2%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 4.9 fps, Avg. Travel Time= 4.1 min

Peak Depth= 1.40'
Capacity at bank full= 28.43 cfs
24.0" Diameter Pipe n= 0.021 Length= 1,205.0' Slope= 0.0412 '/'

Reach 14R:

Inflow	=	8.11 cfs @	12.38 hrs, Volume=	1.217 af	
Outflow	=	8.04 cfs @	12.41 hrs, Volume=	1.215 af,	Atten= 1%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.9 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 2.3 min

Peak Depth= 0.70'
Capacity at bank full= 18.04 cfs
18.0" Diameter Pipe n= 0.021 Length= 703.0' Slope= 0.0770 '/'

Reach 15R:

Inflow	=	17.69 cfs @	12.26 hrs,	Volume=	1.999 af
Outflow	=	17.68 cfs @	12.26 hrs,	Volume=	1.999 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.3 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.1 fps, Avg. Travel Time= 0.1 min

Peak Depth= 1.16'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	11.85 cfs @	12.19 hrs,	Volume=	1.317 af
Outflow	=	11.74 cfs @	12.22 hrs,	Volume=	1.316 af, Atten= 1%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.3 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.03'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	10.68 cfs @	12.06 hrs,	Volume=	0.670 af
Outflow	=	4.24 cfs @	12.01 hrs,	Volume=	0.669 af, Atten= 60%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 2.5 min

Peak Depth= 1.00'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 18R:

Inflow	=	5.93 cfs @	12.56 hrs,	Volume=	0.671 af
Outflow	=	4.07 cfs @	13.33 hrs,	Volume=	0.671 af, Atten= 31%, Lag= 46.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.4 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.3 fps, Avg. Travel Time= 1.0 min

Peak Depth= 1.00'
Capacity at bank full= 3.76 cfs
12.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0290 '/'

Reach 19R:

Inflow	=	7.13 cfs @	12.26 hrs,	Volume=	0.683 af
Outflow	=	5.93 cfs @	12.56 hrs,	Volume=	0.671 af, Atten= 17%, Lag= 18.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.1 fps, Min. Travel Time= 9.9 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 18.6 min

Peak Depth= 0.44'
Capacity at bank full= 234.10 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 1,250.0' Slope= 0.0194 '/'
Side Slope Z-value= 10.0 '/'

Reach 21R:

Inflow	=	8.37 cfs @	12.26 hrs,	Volume=	0.796 af
Outflow	=	5.04 cfs @	12.95 hrs,	Volume=	0.795 af, Atten= 40%, Lag= 41.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.1 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 4.0 fps, Avg. Travel Time= 2.7 min

Peak Depth= 1.00'
Capacity at bank full= 4.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow	=	13.80 cfs @	12.16 hrs,	Volume=	1.083 af
Outflow	=	9.17 cfs @	12.15 hrs,	Volume=	1.082 af, Atten= 34%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 2.3 min

Peak Depth= 1.50'
Capacity at bank full= 9.17 cfs
18.0" Diameter Pipe n= 0.021 Length= 396.0' Slope= 0.0199 '/'

Reach 23R:

Inflow	=	6.25 cfs @	12.24 hrs,	Volume=	0.580 af
Outflow	=	5.72 cfs @	12.40 hrs,	Volume=	0.579 af, Atten= 8%, Lag= 9.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 2.3 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 24R:

Inflow	=	11.31 cfs @	12.18 hrs,	Volume=	1.091 af
Outflow	=	3.69 cfs @	11.92 hrs,	Volume=	1.091 af, Atten= 67%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 25R:

Inflow	=	12.66 cfs @	12.15 hrs,	Volume=	2.173 af
Outflow	=	12.63 cfs @	12.23 hrs,	Volume=	2.170 af, Atten= 0%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 2.2 min

Peak Depth= 2.00'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 26R:

Inflow	=	38.70 cfs @	12.15 hrs,	Volume=	5.273 af
Outflow	=	18.37 cfs @	14.00 hrs,	Volume=	5.261 af, Atten= 53%, Lag= 110.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 3.8 min

Peak Depth= 2.50'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 27R:

Inflow	=	18.96 cfs @	12.20 hrs,	Volume=	1.994 af
Outflow	=	11.86 cfs @	12.15 hrs,	Volume=	1.991 af, Atten= 37%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 2.1 min

Peak Depth= 1.25'
Capacity at bank full= 11.86 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
15.0" Diameter Pipe n= 0.021 Length= 360.0' Slope= 0.0220 '/'

Reach 28R:

Inflow	=	23.25 cfs @	12.19 hrs,	Volume=	5.679 af
Outflow	=	22.73 cfs @	12.35 hrs,	Volume=	5.647 af, Atten= 2%, Lag= 9.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.6 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 8.8 min

Peak Depth= 1.99'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach 29R:

Inflow	=	128.05 cfs @	12.37 hrs,	Volume=	18.475 af
Outflow	=	127.77 cfs @	12.38 hrs,	Volume=	18.469 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.0 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 6.6 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.25'
Capacity at bank full= 308.26 cfs
60.0" Diameter Pipe n= 0.013 Length= 212.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	26.57 cfs @	12.24 hrs,	Volume=	2.633 af
Outflow	=	26.09 cfs @	12.31 hrs,	Volume=	2.625 af, Atten= 2%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 4.7 min

Peak Depth= 1.54'
Capacity at bank full= 28.01 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.021 Length= 628.0' Slope= 0.0100 '/'

Reach 31R:

Inflow	=	12.78 cfs @	12.17 hrs,	Volume=	1.339 af
Outflow	=	12.55 cfs @	12.24 hrs,	Volume=	1.335 af, Atten= 2%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.3 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 4.4 fps, Avg. Travel Time= 3.8 min

Peak Depth= 1.07'
Capacity at bank full= 14.69 cfs
18.0" Diameter Pipe n= 0.021 Length= 1,009.0' Slope= 0.0510 '/'

Reach 32R:

Inflow	=	11.59 cfs @	12.06 hrs,	Volume=	0.725 af
Outflow	=	6.13 cfs @	12.50 hrs,	Volume=	0.725 af, Atten= 47%, Lag= 26.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.6 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 1.1 min

Peak Depth= 1.00'
Capacity at bank full= 5.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0723 '/'

Reach 33R:

Inflow	=	4.28 cfs @	12.13 hrs,	Volume=	0.324 af
Outflow	=	4.24 cfs @	12.15 hrs,	Volume=	0.324 af, Atten= 1%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.2 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 1.1 min

Peak Depth= 0.49'
Capacity at bank full= 8.90 cfs
12.0" Diameter Pipe n= 0.021 Length= 325.0' Slope= 0.1630 '/'

Reach 34R:

Inflow	=	4.09 cfs @	12.18 hrs,	Volume=	0.339 af
Outflow	=	3.95 cfs @	12.25 hrs,	Volume=	0.338 af, Atten= 3%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.2 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.4 fps, Avg. Travel Time= 4.6 min

Peak Depth= 1.01'
Capacity at bank full= 5.03 cfs
18.0" Diameter Pipe n= 0.021 Length= 392.0' Slope= 0.0060 '/'

Reach 35R:

Inflow	=	131.00 cfs @	12.37 hrs,	Volume=	18.807 af
Outflow	=	130.60 cfs @	12.39 hrs,	Volume=	18.795 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.0 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 6.6 fps, Avg. Travel Time= 1.2 min

Peak Depth= 2.27'
Capacity at bank full= 308.11 cfs
60.0" Diameter Pipe n= 0.013 Length= 473.0' Slope= 0.0140 '/'

Reach 36R:

Inflow	=	130.60 cfs @	12.39 hrs,	Volume=	18.795 af
Outflow	=	130.44 cfs @	12.40 hrs,	Volume=	18.784 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.0 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.6 fps, Avg. Travel Time= 1.0 min

Peak Depth= 2.27'
Capacity at bank full= 308.22 cfs
60.0" Diameter Pipe n= 0.013 Length= 377.0' Slope= 0.0140 '/'

Reach 37R:

Inflow	=	34.13 cfs @	12.27 hrs,	Volume=	3.699 af
Outflow	=	34.09 cfs @	12.27 hrs,	Volume=	3.699 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.5 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.3 fps, Avg. Travel Time= 0.2 min

Peak Depth= 1.08'
Capacity at bank full= 165.55 cfs
42.0" Diameter Pipe n= 0.013 Length= 65.0' Slope= 0.0271 '/'

Reach 38R: SWALE

Inflow	=	13.07 cfs @	12.41 hrs,	Volume=	1.653 af
Outflow	=	12.96 cfs @	12.46 hrs,	Volume=	1.647 af, Atten= 1%, Lag= 2.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.2 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 3.9 min

Peak Depth= 0.40'
Capacity at bank full= 301.56 cfs
4.00' x 2.00' deep channel, n= 0.040 Length= 690.0' Slope= 0.1290 '/'
Side Slope Z-value= 3.0 '/'

Reach 39R:

Inflow	=	13.11 cfs @	12.40 hrs,	Volume=	1.654 af
Outflow	=	13.07 cfs @	12.41 hrs,	Volume=	1.653 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.5 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 0.8 min

Peak Depth= 0.70'
Capacity at bank full= 109.70 cfs
36.0" Diameter Pipe n= 0.021 Length= 255.0' Slope= 0.0706 '/'

Reach 40R: CHANNEL

Inflow	=	217.46 cfs @	12.40 hrs,	Volume=	29.488 af
Outflow	=	216.08 cfs @	12.47 hrs,	Volume=	29.394 af, Atten= 1%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 5.5 min

Peak Depth= 2.63'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 34.09 cfs @ 12.27 hrs, Volume= 3.699 af
Outflow = 32.67 cfs @ 12.41 hrs, Volume= 3.671 af, Atten= 4%, Lag= 8.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.7 fps, Min. Travel Time= 4.0 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 9.1 min

Peak Depth= 0.99'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 45.31 cfs @ 12.40 hrs, Volume= 5.564 af
Outflow = 45.07 cfs @ 12.45 hrs, Volume= 5.550 af, Atten= 1%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.7 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 3.7 min

Peak Depth= 0.90'
Capacity at bank full= 237.55 cfs
8.00' x 2.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 45.35 cfs @ 12.40 hrs, Volume= 5.565 af
Outflow = 45.31 cfs @ 12.40 hrs, Volume= 5.564 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 22.3 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 9.8 fps, Avg. Travel Time= 0.4 min

Peak Depth= 0.93'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 19.83 cfs @ 12.17 hrs, Volume= 2.144 af
Outflow = 19.34 cfs @ 12.24 hrs, Volume= 2.139 af, Atten= 2%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.3 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 3.1 min

Peak Depth= 1.57'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	19.92 cfs @	12.17 hrs,	Volume=	2.145 af
Outflow	=	19.83 cfs @	12.17 hrs,	Volume=	2.144 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.5 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.37'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	19.97 cfs @	12.15 hrs,	Volume=	2.147 af
Outflow	=	19.92 cfs @	12.17 hrs,	Volume=	2.145 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.2 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.12'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Inflow	=	10.75 cfs @	12.33 hrs,	Volume=	1.115 af
Outflow	=	10.70 cfs @	12.35 hrs,	Volume=	1.114 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.9 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 1.4 min

Peak Depth= 1.31'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 118R:

Inflow	=	6.74 cfs @	12.31 hrs,	Volume=	0.684 af
Outflow	=	6.69 cfs @	12.33 hrs,	Volume=	0.684 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.1 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 4.4 fps, Avg. Travel Time= 1.5 min

Peak Depth= 0.65'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119R:

Inflow	=	11.77 cfs @	12.34 hrs,	Volume=	1.260 af
Outflow	=	11.71 cfs @	12.37 hrs,	Volume=	1.259 af, Atten= 1%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.5 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.7 fps, Avg. Travel Time= 2.1 min

Peak Depth= 0.91'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 122R:

Inflow	=	8.46 cfs @	12.16 hrs,	Volume=	0.687 af
Outflow	=	6.28 cfs @	12.49 hrs,	Volume=	0.670 af, Atten= 26%, Lag= 19.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.1 fps, Min. Travel Time= 11.6 min
Avg. Velocity = 0.9 fps, Avg. Travel Time= 27.5 min

Peak Depth= 0.27'
Capacity at bank full= 263.47 cfs
10.00' x 2.00' deep channel, n= 0.040 Length= 1,462.0' Slope= 0.0218 '/'
Side Slope Z-value= 5.0 '/'

Reach 200R:

Inflow	=	14.04 cfs @	12.25 hrs,	Volume=	1.314 af
Outflow	=	13.68 cfs @	12.34 hrs,	Volume=	1.307 af, Atten= 3%, Lag= 5.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 6.4 min

Peak Depth= 0.84'
Capacity at bank full= 95.83 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 650.0' Slope= 0.0231 '/'
Side Slope Z-value= 3.0 '/'

Reach 280R:

Inflow	=	17.13 cfs @	12.44 hrs,	Volume=	2.032 af
Outflow	=	16.07 cfs @	12.68 hrs,	Volume=	2.000 af, Atten= 6%, Lag= 14.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.1 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 17.1 min

Peak Depth= 0.60'
Capacity at bank full= 711.78 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 985.0' Slope= 0.0081 '/'
Side Slope Z-value= 5.0 '/'

Reach DP#1: (new node)

Inflow	=	252.23 cfs @	12.52 hrs,	Volume=	35.548 af
Outflow	=	252.23 cfs @	12.52 hrs,	Volume=	35.548 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow	=	32.95 cfs @	12.57 hrs,	Volume=	4.375 af
Outflow	=	32.95 cfs @	12.57 hrs,	Volume=	4.375 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow	=	226.27 cfs @	12.46 hrs,	Volume=	31.654 af
Outflow	=	221.58 cfs @	12.52 hrs,	Volume=	31.492 af, Atten= 2%, Lag= 3.9 min
Primary	=	221.58 cfs @	12.52 hrs,	Volume=	31.492 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 388.95' Storage= 53,438 cf
Plug-Flow detention time= 6.3 min calculated for 31.492 af (99% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Culvert
- 4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

10-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=5.50"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=6.7 min CN=80 Area=17.900 ac Runoff= 67.18 cfs 4.652 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 119.27 cfs 15.354 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 34.62 cfs 5.014 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 11.85 cfs 0.942 af

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD
Tc=9.3 min CN=84 Area=7.400 ac Runoff= 28.13 cfs 2.161 af

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI
Tc=17.4 min CN=84 Area=10.060 ac Runoff= 31.01 cfs 2.931 af

Subcatchment 9S: AREA NORTH OF D-POND
Tc=11.6 min CN=84 Area=9.870 ac Runoff= 35.35 cfs 2.880 af

Subcatchment 10S: area near trailer road
Tc=17.1 min CN=76 Area=12.620 ac Runoff= 31.21 cfs 2.881 af

Subcatchment 11S: AREA JUST BELOW LOOP ROAD
Tc=25.7 min CN=85 Area=8.940 ac Runoff= 24.04 cfs 2.672 af

Subcatchment 12S: AREA WEST OF LOOP ROAD
Tc=35.1 min CN=77 Area=18.730 ac Runoff= 35.09 cfs 4.390 af

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=17.9 min CN=77 Area=18.780 ac Runoff= 47.17 cfs 4.428 af

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY
Tc=17.0 min CN=86 Area=7.960 ac Runoff= 25.93 cfs 2.453 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI
Tc=13.7 min CN=86 Area=7.350 ac Runoff= 25.94 cfs 2.267 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST
Tc=10.9 min CN=84 Area=7.210 ac Runoff= 26.33 cfs 2.105 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 11.95 cfs 1.127 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 34.70 cfs 3.383 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 18.26 cfs 2.606 af

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ
Tc=3.7 min CN=86 Area=4.090 ac Runoff= 19.67 cfs 1.265 af

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD
Tc=18.3 min CN=78 Area=6.950 ac Runoff= 17.85 cfs 1.692 af

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=3.3 min CN=74 Area=7.660 ac Runoff= 26.79 cfs 1.643 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=11.600 ac Runoff= 27.63 cfs 2.313 af

Subcatchment 24S: AREA AROUND LOOP ROAD
Tc=7.7 min CN=79 Area=8.574 ac Runoff= 30.29 cfs 2.161 af

Subcatchment 25S: AREA NEAR LOOP ROAD
Tc=22.7 min CN=79 Area=9.300 ac Runoff= 22.52 cfs 2.332 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=28.7 min CN=72 Area=28.190 ac Runoff= 48.96 cfs 5.588 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=29.4 min CN=73 Area=22.860 ac Runoff= 40.71 cfs 4.693 af

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE
Tc=17.0 min CN=72 Area=8.060 ac Runoff= 17.40 cfs 1.605 af

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE
Tc=15.1 min CN=81 Area=11.600 ac Runoff= 35.01 cfs 3.099 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 18.89 cfs 1.882 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 15.22 cfs 1.987 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 55.20 cfs 6.494 af

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE
Tc=22.6 min CN=78 Area=16.360 ac Runoff= 38.52 cfs 3.976 af

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8
Tc=13.3 min CN=78 Area=3.640 ac Runoff= 10.52 cfs 0.887 af

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD
Tc=17.8 min CN=81 Area=2.210 ac Runoff= 6.25 cfs 0.590 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 15.27 cfs 1.297 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 39.78 cfs 3.472 af

Subcatchment 119S:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 22.14 cfs 2.416 af

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD
Tc=20.5 min CN=74 Area=7.280 ac Runoff= 15.66 cfs 1.552 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=10.8 min CN=72 Area=8.090 ac Runoff= 20.63 cfs 1.614 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=8.1 min CN=72 Area=3.810 ac Runoff= 10.55 cfs 0.761 af

Subcatchment 129S: AIRPORT CENTER DRIVE
Tc=16.4 min CN=82 Area=3.970 ac Runoff= 11.93 cfs 1.092 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=73 Area=31.060 ac Runoff= 48.69 cfs 6.355 af

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE
Tc=12.6 min CN=80 Area=2.690 ac Runoff= 8.43 cfs 0.698 af

Reach 3R: DP3 Inflow= 275.71 cfs 40.970 af
Length= 50.0' Max Vel= 7.2 fps Capacity= 1,521.75 cfs Outflow= 275.60 cfs 40.962 af

Reach 5R: Inflow= 34.62 cfs 5.014 af
Length= 570.0' Max Vel= 8.8 fps Capacity= 60.37 cfs Outflow= 34.51 cfs 5.006 af

Reach 6R: Inflow= 52.32 cfs 8.389 af
Length= 350.0' Max Vel= 2.3 fps Capacity= 148.76 cfs Outflow= 52.27 cfs 8.362 af

Reach 7R: Inflow= 79.39 cfs 11.834 af
Length= 220.0' Max Vel= 4.4 fps Capacity= 504.53 cfs Outflow= 79.09 cfs 11.821 af

Reach 8R: Inflow= 133.84 cfs 18.315 af
Length= 45.0' Max Vel= 12.3 fps Capacity= 217.33 cfs Outflow= 133.81 cfs 18.314 af

Reach 9R: Inflow= 133.81 cfs 18.314 af
Length= 290.0' Max Vel= 4.1 fps Capacity= 278.93 cfs Outflow= 133.21 cfs 18.288 af

Reach 10R: Inflow= 211.10 cfs 33.166 af
Length= 280.0' Max Vel= 4.7 fps Capacity= 316.14 cfs Outflow= 210.33 cfs 33.125 af

Reach 11R: Inflow= 46.22 cfs 6.715 af
Length= 670.0' Max Vel= 10.1 fps Capacity= 27.71 cfs Outflow= 27.71 cfs 6.707 af

Reach 12R: Inflow= 50.46 cfs 8.174 af
Length= 213.0' Max Vel= 13.0 fps Capacity= 56.21 cfs Outflow= 50.35 cfs 8.171 af

Reach 13R: Inflow= 50.05 cfs 5.773 af
Length= 1,205.0' Max Vel= 10.3 fps Capacity= 28.43 cfs Outflow= 29.91 cfs 5.760 af

Reach 14R: Inflow= 15.69 cfs 2.678 af
Length= 703.0' Max Vel= 11.5 fps Capacity= 18.04 cfs Outflow= 15.50 cfs 2.674 af

Reach 15R: Inflow= 33.37 cfs 4.109 af
Length= 22.0' Max Vel= 10.0 fps Capacity= 27.71 cfs Outflow= 28.73 cfs 4.109 af

Reach 16R: Inflow= 19.39 cfs 2.560 af
Length= 390.0' Max Vel= 8.1 fps Capacity= 22.62 cfs Outflow= 19.19 cfs 2.558 af

Reach 17R: Inflow= 19.67 cfs 1.265 af
Length= 465.0' Max Vel= 5.9 fps Capacity= 4.13 cfs Outflow= 4.26 cfs 1.263 af

Reach 18R: Inflow= 15.23 cfs 1.587 af
Length= 200.0' Max Vel= 5.4 fps Capacity= 3.76 cfs Outflow= 3.76 cfs 1.586 af

Reach 19R: Inflow= 17.40 cfs 1.605 af
Length= 1,250.0' Max Vel= 2.7 fps Capacity= 234.10 cfs Outflow= 15.23 cfs 1.587 af

Reach 21R: Inflow= 17.85 cfs 1.692 af
Length= 640.0' Max Vel= 7.1 fps Capacity= 4.93 cfs Outflow= 5.10 cfs 1.689 af

Reach 22R: Inflow= 26.33 cfs 2.105 af
Length= 396.0' Max Vel= 5.9 fps Capacity= 9.17 cfs Outflow= 9.45 cfs 2.102 af

Reach 23R: Inflow= 11.95 cfs 1.127 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 5.74 cfs 1.126 af

Reach 24R: Inflow= 17.51 cfs 2.068 af
Length= 80.0' Max Vel= 5.1 fps Capacity= 3.49 cfs Outflow= 3.62 cfs 2.068 af

Reach 25R: Inflow= 12.94 cfs 4.170 af
Length= 300.0' Max Vel= 4.2 fps Capacity= 11.72 cfs Outflow= 12.23 cfs 4.165 af

Reach 26R: Inflow= 51.70 cfs 10.278 af
Length= 550.0' Max Vel= 4.3 fps Capacity= 18.31 cfs Outflow= 18.31 cfs 10.259 af

Reach 27R: Inflow= 30.88 cfs 3.956 af
Length= 360.0' Max Vel= 5.5 fps Capacity= 11.86 cfs Outflow= 12.33 cfs 3.952 af

Reach 28R: Inflow= 28.83 cfs 11.146 af
Length= 1,330.0' Max Vel= 4.7 fps Capacity= 29.20 cfs Outflow= 27.77 cfs 11.097 af

Reach 29R: Inflow= 196.43 cfs 34.808 af
Length= 212.0' Max Vel= 16.6 fps Capacity= 308.26 cfs Outflow= 196.37 cfs 34.799 af

Reach 30R: Inflow= 40.61 cfs 5.439 af
Length= 628.0' Max Vel= 5.1 fps Capacity= 28.01 cfs Outflow= 29.13 cfs 5.427 af

Reach 31R: Inflow= 21.39 cfs 2.993 af
Length= 1,009.0' Max Vel= 9.5 fps Capacity= 14.69 cfs Outflow= 14.89 cfs 2.987 af

Reach 32R: Inflow= 26.79 cfs 1.643 af
Length= 300.0' Max Vel= 8.5 fps Capacity= 5.93 cfs Outflow= 6.21 cfs 1.642 af

Reach 33R: Inflow= 10.55 cfs 0.761 af
Length= 325.0' Max Vel= 12.9 fps Capacity= 8.90 cfs Outflow= 8.93 cfs 0.761 af

Reach 34R: Inflow= 8.43 cfs 0.698 af
Length= 392.0' Max Vel= 3.2 fps Capacity= 5.03 cfs Outflow= 5.03 cfs 0.696 af

Reach 35R: Inflow= 201.40 cfs 35.496 af
Length= 473.0' Max Vel= 16.7 fps Capacity= 308.11 cfs Outflow= 201.12 cfs 35.477 af

Reach 36R: Inflow= 201.12 cfs 35.477 af
Length= 377.0' Max Vel= 16.7 fps Capacity= 308.22 cfs Outflow= 200.89 cfs 35.462 af

Reach 37R: Inflow= 82.76 cfs 8.319 af
Length= 65.0' Max Vel= 17.2 fps Capacity= 165.55 cfs Outflow= 82.71 cfs 8.318 af

Reach 38R: SWALE Inflow= 36.32 cfs 3.900 af
Length= 690.0' Max Vel= 8.5 fps Capacity= 301.56 cfs Outflow= 36.26 cfs 3.891 af

Reach 39R: Inflow= 36.35 cfs 3.902 af
Length= 255.0' Max Vel= 13.9 fps Capacity= 109.70 cfs Outflow= 36.32 cfs 3.900 af

Reach 40R: CHANNEL Inflow= 387.54 cfs 58.138 af
Length= 820.0' Max Vel= 6.9 fps Capacity= 539.62 cfs Outflow= 385.21 cfs 58.000 af

Reach 41R: SWALE Inflow= 82.71 cfs 8.318 af
Length= 890.0' Max Vel= 4.7 fps Capacity= 570.88 cfs Outflow= 80.93 cfs 8.277 af

Reach 42R: SWALE Inflow= 90.53 cfs 11.538 af
Length= 350.0' Max Vel= 4.5 fps Capacity= 237.55 cfs Outflow= 89.72 cfs 11.518 af

Reach 43R: Inflow= 90.63 cfs 11.541 af
Length= 255.0' Max Vel= 27.0 fps Capacity= 296.25 cfs Outflow= 90.53 cfs 11.538 af

Reach 44R: Inflow= 34.38 cfs 4.486 af
Length= 467.0' Max Vel= 5.9 fps Capacity= 36.45 cfs Outflow= 34.39 cfs 4.479 af

Reach 45R: Inflow= 42.04 cfs 4.488 af
Length= 126.0' Max Vel= 7.9 fps Capacity= 34.38 cfs Outflow= 34.38 cfs 4.486 af

Reach 46R: Inflow= 42.66 cfs 4.491 af
Length= 377.0' Max Vel= 11.6 fps Capacity= 40.58 cfs Outflow= 42.04 cfs 4.488 af

Reach 47R: Inflow= 22.52 cfs 2.332 af
Length= 200.0' Max Vel= 5.1 fps Capacity= 14.00 cfs Outflow= 14.25 cfs 2.330 af

Reach 118R: Inflow= 15.66 cfs 1.552 af
Length= 400.0' Max Vel= 11.0 fps Capacity= 17.16 cfs Outflow= 15.58 cfs 1.551 af

Reach 119R: Inflow= 22.14 cfs 2.416 af
Length= 461.0' Max Vel= 9.8 fps Capacity= 27.72 cfs Outflow= 22.03 cfs 2.414 af

Reach 122R: Inflow= 20.63 cfs 1.614 af
Length= 1,462.0' Max Vel= 2.9 fps Capacity= 263.47 cfs Outflow= 16.83 cfs 1.589 af

Reach 200R: Inflow= 31.21 cfs 2.881 af
Length= 650.0' Max Vel= 4.5 fps Capacity= 95.83 cfs Outflow= 30.56 cfs 2.871 af

Reach 280R: Inflow= 40.71 cfs 4.693 af
Length= 985.0' Max Vel= 2.7 fps Capacity= 711.78 cfs Outflow= 39.18 cfs 4.646 af

Reach DP#1: (new node) Inflow= 465.68 cfs 71.684 af
Outflow= 465.68 cfs 71.684 af

Reach DP#2: DESIGN POINT #2 Inflow= 83.03 cfs 10.234 af
Outflow= 83.03 cfs 10.234 af

Pond 1P: EXISTING POND Peak Storage= 97,065 cf Inflow= 405.88 cfs 62.652 af
Primary= 395.38 cfs 62.457 af Outflow= 395.38 cfs 62.457 af

Runoff Area = 485.774 ac Volume = 123.709 af Average Depth = 3.06"

Subcatchment 1S: AREA NEAR POND

Runoff = 67.18 cfs @ 12.10 hrs, Volume= 4.652 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
10.120	77	Woods, Good, HSG D
1.540	98	Paved parking & roofs
6.240	80	Pasture/grassland/range, Good, HSG D
17.900	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0244	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.4	260	0.0244	3.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	86	0.0488	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	890	0.0150	5.1	102.83	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
6.7	1,386	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 119.27 cfs @ 12.44 hrs, Volume= 15.354 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 34.62 cfs @ 12.66 hrs, Volume= 5.014 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 11.85 cfs @ 12.14 hrs, Volume= 0.942 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD

Runoff = 28.13 cfs @ 12.13 hrs, Volume= 2.161 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.400	74	Pasture/grassland/range, Good, HSG C
3.000	98	Paved parking & roofs
7.400	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	30	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.5	395	0.0730	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	60	0.0330	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
4.5	252	0.0179	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0143	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	800	Total			

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI

Runoff = 31.01 cfs @ 12.24 hrs, Volume= 2.931 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
5.060	98	Paved parking & roofs
5.000	70	Woods, Good, HSG C
10.060	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	150	0.1316	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.5	78	0.1316	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	357	0.0112	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	585	Total			

Subcatchment 9S: AREA NORTH OF D-POND

Runoff = 35.35 cfs @ 12.16 hrs, Volume= 2.880 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.190	98	Paved parking & roofs
5.680	74	Pasture/grassland/range, Good, HSG C
9.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	150	0.0117	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	150	0.0117	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.5	252	0.0050	0.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.6	552	Total			

Subcatchment 10S: area near trailer road

Runoff = 31.21 cfs @ 12.24 hrs, Volume= 2.881 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.000	70	Woods, Good, HSG C
6.090	77	Woods, Good, HSG D
1.130	74	Pasture/grassland/range, Good, HSG C
0.430	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
12.620	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	150	0.1200	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.1	360	0.0556	1.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	60	0.2333	2.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
17.1	1,135	Total			

Subcatchment 11S: AREA JUST BELOW LOOP ROAD

Runoff = 24.04 cfs @ 12.35 hrs, Volume= 2.672 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.210	98	Paved parking & roofs
4.480	74	Pasture/grassland/range, Good, HSG C
0.250	70	Woods, Good, HSG C
8.940	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	150	0.0153	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.3	40	0.0153	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
1.9	200	0.0015	1.7	5.42	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.021
0.6	377	0.0448	10.2	40.58	**Circular Channel (pipe),** Diam= 27.0" Area= 4.0 sf Perim= 7.1' r= 0.56' n= 0.021
0.3	126	0.0183	7.0	34.35	**Circular Channel (pipe),** Diam= 30.0" Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.021
1.5	467	0.0078	5.2	36.47	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
25.7	1,400	Total			

Subcatchment 12S: AREA WEST OF LOOP ROAD

Runoff = 35.09 cfs @ 12.49 hrs, Volume= 4.390 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
6.740	74	Pasture/grassland/range, Good, HSG C
7.940	70	Woods, Good, HSG C
4.050	98	Paved parking & roofs
18.730	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0933	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.2	544	0.0846	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.5	488	0.0861	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	272	0.0411	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	278	0.0791	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1	582	0.0137	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
35.1	2,314	Total			

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 47.17 cfs @ 12.25 hrs, Volume= 4.428 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
7.160	70	Woods, Good, HSG C
3.300	98	Paved parking & roofs
8.320	74	Pasture/grassland/range, Good, HSG C
18.780	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	30	0.2667	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
10.9	120	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.0	190	0.2211	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	1,804	0.0277	7.2	157.55	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=2.00' Z= 3.0 '/' n= 0.040
17.9	2,144	Total			

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY

Runoff = 25.93 cfs @ 12.23 hrs, Volume= 2.453 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.260	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
4.080	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	130	0.0308	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.9	220	0.0364	3.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	642	0.0122	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	275	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	619	0.0030	1.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.0	1,886	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI

Runoff = 25.94 cfs @ 12.19 hrs, Volume= 2.267 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.760	74	Pasture/grassland/range, Good, HSG C
3.590	98	Paved parking & roofs
7.350	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0320	1.5		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
5.4	100	0.0797	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.0	470	0.0797	2.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.5	400	0.0725	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0600	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.7	1,070	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST

Runoff = 26.33 cfs @ 12.15 hrs, Volume= 2.105 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.340	74	Pasture/grassland/range, Good, HSG C
2.870	98	Paved parking & roofs
7.210	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	52	0.0310	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.50"
5.6	98	0.0695	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.2	138	0.0695	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	275	0.0580	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	285	0.0910	11.2	112.49	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=2.00' Z= 2.0 '/' n= 0.040
10.9	923	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 11.95 cfs @ 12.24 hrs, Volume= 1.127 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 34.70 cfs @ 12.27 hrs, Volume= 3.383 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 18.26 cfs @ 12.60 hrs, Volume= 2.606 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ

Runoff = 19.67 cfs @ 12.06 hrs, Volume= 1.265 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.810	74	Pasture/grassland/range, Good, HSG C
0.220	70	Woods, Good, HSG C
2.060	98	Paved parking & roofs
4.090	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0267	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	175	0.0457	4.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	475	0.0589	4.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	800	Total			

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD

Runoff = 17.85 cfs @ 12.25 hrs, Volume= 1.692 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
5.070	74	Pasture/grassland/range, Good, HSG C
0.710	70	Woods, Good, HSG C
1.170	98	Paved parking & roofs
6.950	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.9	430	0.1256	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.1500	2.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	164	0.0488	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.3	824	Total			

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 26.79 cfs @ 12.06 hrs, Volume= 1.643 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.990	74	Pasture/grassland/range, Good, HSG C
3.900	70	Woods, Good, HSG C
0.770	98	Paved parking & roofs
7.660	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0780	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	670	0.0780	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	536	0.0597	23.6	189.13	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 5.0 '/' n= 0.011
3.3	1,356	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 27.63 cfs @ 12.19 hrs, Volume= 2.313 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.360	74	Pasture/grassland/range, Good, HSG C
8.700	70	Woods, Good, HSG C
0.540	98	Paved parking & roofs
11.600	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: AREA AROUND LOOP ROAD

Runoff = 30.29 cfs @ 12.11 hrs, Volume= 2.161 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
6.660	74	Pasture/grassland/range, Good, HSG C
0.084	70	Woods, Good, HSG C
1.830	98	Paved parking & roofs
8.574	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0580	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	84	0.0238	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	204	0.0392	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	128	0.1250	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	240	0.0500	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	70	0.0286	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	876	Total			

Subcatchment 25S: AREA NEAR LOOP ROAD

Runoff = 22.52 cfs @ 12.31 hrs, Volume= 2.332 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.380	74	Pasture/grassland/range, Good, HSG C
2.460	70	Woods, Good, HSG C
2.460	98	Paved parking & roofs
9.300	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	258	0.1938	2.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	190	0.1158	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	202	0.0100	2.8	2.21	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.021
1.6	309	0.0100	3.3	4.00	**Circular Channel (pipe),** Diam= 15.0" Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.021
1.6	358	0.0100	3.7	6.50	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.021
0.5	164	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
22.7	1,631	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 48.96 cfs @ 12.41 hrs, Volume= 5.588 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
20.860	70	Woods, Good, HSG C
0.560	87	Dirt roads, HSG C
6.340	74	Pasture/grassland/range, Good, HSG C
0.430	98	Paved parking & roofs
28.190	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.3	410	0.1756	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	327	0.1407	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	389	0.1131	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.1	985	0.0081	4.0	160.60	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
28.7	2,261	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 40.71 cfs @ 12.42 hrs, Volume= 4.693 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
15.100	70	Woods, Good, HSG C
6.110	74	Pasture/grassland/range, Good, HSG C
1.380	98	Paved parking & roofs
0.270	87	Dirt roads, HSG C
22.860	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	150	0.0133	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.4	38	0.0526	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.5143	3.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	370	0.1514	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	276	0.0435	3.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.0	315	0.1397	2.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
29.4	1,184	Total			

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE

Runoff = 17.40 cfs @ 12.24 hrs, Volume= 1.605 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.960	74	Pasture/grassland/range, Good, HSG C
5.890	70	Woods, Good, HSG C
0.210	98	Paved parking & roofs
8.060	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	36	0.0556	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.3	34	0.5294	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.1	80	0.2667	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	96	0.1563	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,250	0.0194	5.4	130.05	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 5.0 '/' n= 0.040
17.0	1,496	Total			

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE

Runoff = 35.01 cfs @ 12.21 hrs, Volume= 3.099 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
6.180	74	Pasture/grassland/range, Good, HSG C
1.600	70	Woods, Good, HSG C
3.820	98	Paved parking & roofs
11.600	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	115	0.0348	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.4	207	0.1159	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	53	0.2642	2.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	467	0.0557	6.6	52.81	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.00' Z= 4.0 '/' n= 0.040
15.1	842	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 18.89 cfs @ 12.28 hrs, Volume= 1.882 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 15.22 cfs @ 12.54 hrs, Volume= 1.987 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 55.20 cfs @ 12.39 hrs, Volume= 6.494 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE

Runoff = 38.52 cfs @ 12.31 hrs, Volume= 3.976 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
5.810	70	Woods, Good, HSG C
3.740	98	Paved parking & roofs
6.790	74	Pasture/grassland/range, Good, HSG C
16.360	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	150	0.1129	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.9	293	0.1129	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	1,367	0.0432	9.0	325.61	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=2.00' Z= 5.0 '/' n= 0.040
3.0	1,302	0.0292	7.1	428.98	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 10.0 '/' n= 0.040
22.6	3,112	Total			

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8

Runoff = 10.52 cfs @ 12.19 hrs, Volume= 0.887 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.960	74	Pasture/grassland/range, Good, HSG C
0.680	98	Paved parking & roofs
3.640	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0767	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	241	0.0767	5.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	477	0.0126	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	583	0.0034	1.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.3	1,451	Total			

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD

Runoff = 6.25 cfs @ 12.25 hrs, Volume= 0.590 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.690	98	Paved parking & roofs
1.520	74	Pasture/grassland/range, Good, HSG C
2.210	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.9	272	0.0662	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	470	0.0638	5.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.8	892	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 15.27 cfs @ 12.18 hrs, Volume= 1.297 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 39.78 cfs @ 12.20 hrs, Volume= 3.472 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119S:

Runoff = 22.14 cfs @ 12.33 hrs, Volume= 2.416 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD

Runoff = 15.66 cfs @ 12.29 hrs, Volume= 1.552 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.470	74	Pasture/grassland/range, Good, HSG C
2.430	70	Woods, Good, HSG C
0.380	98	Paved parking & roofs
7.280	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.1	311	0.0643	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	153	0.0915	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	28	0.3571	4.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0116	4.2	84.32	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.040
20.5	714	Total			

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL

Runoff = 20.63 cfs @ 12.16 hrs, Volume= 1.614 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.490	74	Pasture/grassland/range, Good, HSG C
0.200	87	Dirt roads, HSG C
6.250	70	Woods, Good, HSG C
0.150	98	Paved parking & roofs
8.090	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	150	0.0566	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	239	0.0566	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.0	603	0.0829	1.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	1,062	0.0100	9.5	56.73	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 4.0 '/' n= 0.011
10.8	2,054	Total			

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD

Runoff = 10.55 cfs @ 12.12 hrs, Volume= 0.761 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.220	74	Pasture/grassland/range, Good, HSG C
0.047	87	Dirt roads, HSG C
2.530	70	Woods, Good, HSG C
0.013	98	Paved parking & roofs
3.810	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	95	0.2947	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	1,165	0.0100	14.2	284.67	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.011
8.1	1,260	Total			

Subcatchment 129S: AIRPORT CENTER DRIVE

Runoff = 11.93 cfs @ 12.22 hrs, Volume= 1.092 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.000	74	Pasture/grassland/range, Good, HSG C
0.490	70	Woods, Good, HSG C
1.480	98	Paved parking & roofs
3.970	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.2076	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	270	0.2076	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.0	980	0.0132	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.4	1,400	Total			

Subcatchment 200S: area along 207

Runoff = 48.69 cfs @ 12.54 hrs, Volume= 6.355 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.820	77	Woods, Good, HSG D
0.860	80	Pasture/grassland/range, Good, HSG D
21.050	70	Woods, Good, HSG C
5.230	74	Pasture/grassland/range, Good, HSG C
2.100	98	Paved parking & roofs
31.060	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0273	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.6	326	0.0273	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	1,680	0.0214	5.8	92.22	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
1.8	650	0.0231	6.0	95.81	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
38.4	2,806	Total			

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE

Runoff = 8.43 cfs @ 12.17 hrs, Volume= 0.698 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
0.620	70	Woods, Good, HSG C
1.280	74	Pasture/grassland/range, Good, HSG C
2.690	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.2	26	0.5350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.5	387	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.6	513	Total			

Reach 3R: DP3

Inflow = 275.71 cfs @ 12.40 hrs, Volume= 40.970 af
Outflow = 275.60 cfs @ 12.40 hrs, Volume= 40.962 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.2 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.91'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 5R:

Inflow = 34.62 cfs @ 12.66 hrs, Volume= 5.014 af
Outflow = 34.51 cfs @ 12.70 hrs, Volume= 5.006 af, Atten= 0%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.8 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 4.5 fps, Avg. Travel Time= 2.1 min

Peak Depth= 1.63'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow = 52.32 cfs @ 12.47 hrs, Volume= 8.389 af
Outflow = 52.27 cfs @ 12.53 hrs, Volume= 8.362 af, Atten= 0%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.3 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 5.0 min

Peak Depth= 2.28'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow = 79.39 cfs @ 12.31 hrs, Volume= 11.834 af
Outflow = 79.09 cfs @ 12.34 hrs, Volume= 11.821 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.4 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.89'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow = 133.84 cfs @ 12.37 hrs, Volume= 18.315 af
Outflow = 133.81 cfs @ 12.37 hrs, Volume= 18.314 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.3 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.72'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow = 133.81 cfs @ 12.37 hrs, Volume= 18.314 af
Outflow = 133.21 cfs @ 12.41 hrs, Volume= 18.288 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.1 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 2.5 min

Peak Depth= 2.96'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow = 211.10 cfs @ 12.40 hrs, Volume= 33.166 af
Outflow = 210.33 cfs @ 12.43 hrs, Volume= 33.125 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 2.2 min

Peak Depth= 3.31'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow	=	46.22 cfs @	12.53 hrs, Volume=	6.715 af
Outflow	=	27.71 cfs @	12.20 hrs, Volume=	6.707 af, Atten= 40%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 2.1 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R:

Inflow	=	50.46 cfs @	12.36 hrs, Volume=	8.174 af
Outflow	=	50.35 cfs @	12.37 hrs, Volume=	8.171 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.0 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 6.3 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.85'
Capacity at bank full= 56.21 cfs
30.0" Diameter Pipe n= 0.021 Length= 213.0' Slope= 0.0490 '/'

Reach 13R:

Inflow	=	50.05 cfs @	12.22 hrs, Volume=	5.773 af
Outflow	=	29.91 cfs @	12.16 hrs, Volume=	5.760 af, Atten= 40%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.3 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 5.7 fps, Avg. Travel Time= 3.5 min

Peak Depth= 2.00'
Capacity at bank full= 28.43 cfs
24.0" Diameter Pipe n= 0.021 Length= 1,205.0' Slope= 0.0412 '/'

Reach 14R:

Inflow	=	15.69 cfs @	12.22 hrs, Volume=	2.678 af
Outflow	=	15.50 cfs @	12.26 hrs, Volume=	2.674 af, Atten= 1%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.5 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 5.9 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.08'
Capacity at bank full= 18.04 cfs
18.0" Diameter Pipe n= 0.021 Length= 703.0' Slope= 0.0770 '/'

Reach 15R:

Inflow	=	33.37 cfs @	12.25 hrs, Volume=	4.109 af	
Outflow	=	28.73 cfs @	12.17 hrs, Volume=	4.109 af, Atten= 14%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	19.39 cfs @	12.18 hrs, Volume=	2.560 af	
Outflow	=	19.19 cfs @	12.21 hrs, Volume=	2.558 af, Atten= 1%, Lag= 1.6 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.1 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.7 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.43'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	19.67 cfs @	12.06 hrs, Volume=	1.265 af	
Outflow	=	4.26 cfs @	11.80 hrs, Volume=	1.263 af, Atten= 78%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.5 fps, Avg. Travel Time= 2.2 min

Peak Depth= 1.00'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 18R:

Inflow	=	15.23 cfs @	12.47 hrs,	Volume=	1.587 af
Outflow	=	3.76 cfs @	12.20 hrs,	Volume=	1.586 af, Atten= 75%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.4 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.00'
Capacity at bank full= 3.76 cfs
12.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0290 '/'

Reach 19R:

Inflow	=	17.40 cfs @	12.24 hrs,	Volume=	1.605 af
Outflow	=	15.23 cfs @	12.47 hrs,	Volume=	1.587 af, Atten= 12%, Lag= 13.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.7 fps, Min. Travel Time= 7.8 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 16.0 min

Peak Depth= 0.66'
Capacity at bank full= 234.10 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 1,250.0' Slope= 0.0194 '/'
Side Slope Z-value= 10.0 '/'

Reach 21R:

Inflow	=	17.85 cfs @	12.25 hrs,	Volume=	1.692 af
Outflow	=	5.10 cfs @	12.01 hrs,	Volume=	1.689 af, Atten= 71%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.1 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 4.6 fps, Avg. Travel Time= 2.3 min

Peak Depth= 1.00'
Capacity at bank full= 4.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow	=	26.33 cfs @	12.15 hrs,	Volume=	2.105 af
Outflow	=	9.45 cfs @	11.98 hrs,	Volume=	2.102 af, Atten= 64%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.3 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.50'
Capacity at bank full= 9.17 cfs
18.0" Diameter Pipe n= 0.021 Length= 396.0' Slope= 0.0199 '/'

Reach 23R:

Inflow	=	11.95 cfs @	12.24 hrs,	Volume=	1.127 af
Outflow	=	5.74 cfs @	12.11 hrs,	Volume=	1.126 af, Atten= 52%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 24R:

Inflow	=	17.51 cfs @	12.13 hrs,	Volume=	2.068 af
Outflow	=	3.62 cfs @	11.72 hrs,	Volume=	2.068 af, Atten= 79%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.5 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 25R:

Inflow	=	12.94 cfs @	11.98 hrs,	Volume=	4.170 af
Outflow	=	12.23 cfs @	13.58 hrs,	Volume=	4.165 af, Atten= 6%, Lag= 96.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.2 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 1.9 min

Peak Depth= 2.00'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 26R:

Inflow	=	51.70 cfs @	12.13 hrs,	Volume=	10.278 af
Outflow	=	18.31 cfs @	11.85 hrs,	Volume=	10.259 af, Atten= 65%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 3.2 min

Peak Depth= 2.50'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 27R:

Inflow	=	30.88 cfs @	12.19 hrs,	Volume=	3.956 af
Outflow	=	12.33 cfs @	14.23 hrs,	Volume=	3.952 af, Atten= 60%, Lag= 122.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.25'
Capacity at bank full= 11.86 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
15.0" Diameter Pipe n= 0.021 Length= 360.0' Slope= 0.0220 '/'

Reach 28R:

Inflow	=	28.83 cfs @	12.19 hrs,	Volume=	11.146 af
Outflow	=	27.77 cfs @	12.33 hrs,	Volume=	11.097 af, Atten= 4%, Lag= 8.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 7.3 min

Peak Depth= 2.35'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach 29R:

Inflow	=	196.43 cfs @	12.39 hrs,	Volume=	34.808 af
Outflow	=	196.37 cfs @	12.40 hrs,	Volume=	34.799 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.6 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 8.3 fps, Avg. Travel Time= 0.4 min

Peak Depth= 2.90'
Capacity at bank full= 308.26 cfs
60.0" Diameter Pipe n= 0.013 Length= 212.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	40.61 cfs @	12.23 hrs,	Volume=	5.439 af
Outflow	=	29.13 cfs @	12.16 hrs,	Volume=	5.427 af, Atten= 28%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 4.1 min

Peak Depth= 2.00'
Capacity at bank full= 28.01 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.021 Length= 628.0' Slope= 0.0100 '/'

Reach 31R:

Inflow	=	21.39 cfs @	12.23 hrs,	Volume=	2.993 af
Outflow	=	14.89 cfs @	12.80 hrs,	Volume=	2.987 af, Atten= 30%, Lag= 34.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.5 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 3.3 min

Peak Depth= 1.50'
Capacity at bank full= 14.69 cfs
18.0" Diameter Pipe n= 0.021 Length= 1,009.0' Slope= 0.0510 '/'

Reach 32R:

Inflow	=	26.79 cfs @	12.06 hrs,	Volume=	1.643 af
Outflow	=	6.21 cfs @	11.82 hrs,	Volume=	1.642 af, Atten= 77%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.5 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.00'
Capacity at bank full= 5.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0723 '/'

Reach 33R:

Inflow	=	10.55 cfs @	12.12 hrs,	Volume=	0.761 af
Outflow	=	8.93 cfs @	12.25 hrs,	Volume=	0.761 af, Atten= 15%, Lag= 7.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.9 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.0 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.00'
Capacity at bank full= 8.90 cfs
12.0" Diameter Pipe n= 0.021 Length= 325.0' Slope= 0.1630 '/'

Reach 34R:

Inflow	=	8.43 cfs @	12.17 hrs,	Volume=	0.698 af
Outflow	=	5.03 cfs @	12.15 hrs,	Volume=	0.696 af, Atten= 40%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.2 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 4.1 min

Peak Depth= 1.50'
Capacity at bank full= 5.03 cfs
18.0" Diameter Pipe n= 0.021 Length= 392.0' Slope= 0.0060 '/'

Reach 35R:

Inflow	=	201.40 cfs @	12.40 hrs,	Volume=	35.496 af
Outflow	=	201.12 cfs @	12.41 hrs,	Volume=	35.477 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.7 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 8.3 fps, Avg. Travel Time= 0.9 min

Peak Depth= 2.95'
Capacity at bank full= 308.11 cfs
60.0" Diameter Pipe n= 0.013 Length= 473.0' Slope= 0.0140 '/'

Reach 36R:

Inflow	=	201.12 cfs @	12.41 hrs,	Volume=	35.477 af
Outflow	=	200.89 cfs @	12.42 hrs,	Volume=	35.462 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.7 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 8.3 fps, Avg. Travel Time= 0.8 min

Peak Depth= 2.94'
Capacity at bank full= 308.22 cfs
60.0" Diameter Pipe n= 0.013 Length= 377.0' Slope= 0.0140 '/'

Reach 37R:

Inflow	=	82.76 cfs @	12.27 hrs,	Volume=	8.319 af
Outflow	=	82.71 cfs @	12.27 hrs,	Volume=	8.318 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.2 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 7.5 fps, Avg. Travel Time= 0.1 min

Peak Depth= 1.75'
Capacity at bank full= 165.55 cfs
42.0" Diameter Pipe n= 0.013 Length= 65.0' Slope= 0.0271 '/'

Reach 38R: SWALE

Inflow	=	36.32 cfs @	12.28 hrs, Volume=	3.900 af	
Outflow	=	36.26 cfs @	12.32 hrs, Volume=	3.891 af,	Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.5 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 3.6 fps, Avg. Travel Time= 3.2 min

Peak Depth= 0.70'
Capacity at bank full= 301.56 cfs
4.00' x 2.00' deep channel, n= 0.040 Length= 690.0' Slope= 0.1290 '/'
Side Slope Z-value= 3.0 '/'

Reach 39R:

Inflow	=	36.35 cfs @	12.27 hrs, Volume=	3.902 af	
Outflow	=	36.32 cfs @	12.28 hrs, Volume=	3.900 af,	Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.9 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 6.4 fps, Avg. Travel Time= 0.7 min

Peak Depth= 1.19'
Capacity at bank full= 109.70 cfs
36.0" Diameter Pipe n= 0.021 Length= 255.0' Slope= 0.0706 '/'

Reach 40R: CHANNEL

Inflow	=	387.54 cfs @	12.39 hrs, Volume=	58.138 af	
Outflow	=	385.21 cfs @	12.45 hrs, Volume=	58.000 af,	Atten= 1%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.9 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 4.3 min

Peak Depth= 3.44'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 82.71 cfs @ 12.27 hrs, Volume= 8.318 af
Outflow = 80.93 cfs @ 12.37 hrs, Volume= 8.277 af, Atten= 2%, Lag= 5.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 7.6 min

Peak Depth= 1.59'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 90.53 cfs @ 12.39 hrs, Volume= 11.538 af
Outflow = 89.72 cfs @ 12.42 hrs, Volume= 11.518 af, Atten= 1%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.5 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 3.2 min

Peak Depth= 1.26'
Capacity at bank full= 237.55 cfs
8.00' x 2.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 90.63 cfs @ 12.38 hrs, Volume= 11.541 af
Outflow = 90.53 cfs @ 12.39 hrs, Volume= 11.538 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 27.0 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 11.4 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.33'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 34.38 cfs @ 12.15 hrs, Volume= 4.486 af
Outflow = 34.39 cfs @ 12.20 hrs, Volume= 4.479 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 2.7 min

Peak Depth= 2.32'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	42.04 cfs @	12.15 hrs,	Volume=	4.488 af
Outflow	=	34.38 cfs @	12.15 hrs,	Volume=	4.486 af, Atten= 18%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.9 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.0 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.50'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	42.66 cfs @	12.13 hrs,	Volume=	4.491 af
Outflow	=	42.04 cfs @	12.15 hrs,	Volume=	4.488 af, Atten= 1%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.6 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.6 fps, Avg. Travel Time= 1.1 min

Peak Depth= 1.96'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Inflow	=	22.52 cfs @	12.31 hrs,	Volume=	2.332 af
Outflow	=	14.25 cfs @	12.15 hrs,	Volume=	2.330 af, Atten= 37%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.7 fps, Avg. Travel Time= 1.2 min

Peak Depth= 2.00'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 118R:

Inflow	=	15.66 cfs @	12.29 hrs,	Volume=	1.552 af
Outflow	=	15.58 cfs @	12.31 hrs,	Volume=	1.551 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.2 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.13'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119R:

Inflow	=	22.14 cfs @	12.33 hrs, Volume=	2.416 af	
Outflow	=	22.03 cfs @	12.36 hrs, Volume=	2.414 af,	Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.8 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.2 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.35'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 122R:

Inflow	=	20.63 cfs @	12.16 hrs, Volume=	1.614 af	
Outflow	=	16.83 cfs @	12.39 hrs, Volume=	1.589 af,	Atten= 18%, Lag= 13.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 8.3 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 22.2 min

Peak Depth= 0.47'
Capacity at bank full= 263.47 cfs
10.00' x 2.00' deep channel, n= 0.040 Length= 1,462.0' Slope= 0.0218 '/'
Side Slope Z-value= 5.0 '/'

Reach 200R:

Inflow	=	31.21 cfs @	12.24 hrs, Volume=	2.881 af	
Outflow	=	30.56 cfs @	12.31 hrs, Volume=	2.871 af,	Atten= 2%, Lag= 4.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.5 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 5.4 min

Peak Depth= 1.21'
Capacity at bank full= 95.83 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 650.0' Slope= 0.0231 '/'
Side Slope Z-value= 3.0 '/'

Reach 280R:

Inflow = 40.71 cfs @ 12.42 hrs, Volume= 4.693 af
Outflow = 39.18 cfs @ 12.60 hrs, Volume= 4.646 af, Atten= 4%, Lag= 10.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.7 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 14.0 min

Peak Depth= 0.97'
Capacity at bank full= 711.78 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 985.0' Slope= 0.0081 '/'
Side Slope Z-value= 5.0 '/'

Reach DP#1: (new node)

Inflow = 465.68 cfs @ 12.50 hrs, Volume= 71.684 af
Outflow = 465.68 cfs @ 12.50 hrs, Volume= 71.684 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow = 83.03 cfs @ 12.51 hrs, Volume= 10.234 af
Outflow = 83.03 cfs @ 12.51 hrs, Volume= 10.234 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow = 405.88 cfs @ 12.44 hrs, Volume= 62.652 af
Outflow = 395.38 cfs @ 12.51 hrs, Volume= 62.457 af, Atten= 3%, Lag= 4.3 min
Primary = 395.38 cfs @ 12.51 hrs, Volume= 62.457 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 391.02' Storage= 97,065 cf
Plug-Flow detention time= 5.3 min calculated for 62.457 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Culvert
- 4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

25-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=6.50"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=6.7 min CN=80 Area=17.900 ac Runoff= 84.91 cfs 5.929 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 143.93 cfs 18.718 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 45.55 cfs 6.598 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 14.45 cfs 1.162 af

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD
Tc=9.3 min CN=84 Area=7.400 ac Runoff= 34.89 cfs 2.709 af

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI
Tc=17.4 min CN=84 Area=10.060 ac Runoff= 38.50 cfs 3.675 af

Subcatchment 9S: AREA NORTH OF D-POND
Tc=11.6 min CN=84 Area=9.870 ac Runoff= 43.88 cfs 3.612 af

Subcatchment 10S: area near trailer road
Tc=17.1 min CN=76 Area=12.620 ac Runoff= 40.34 cfs 3.737 af

Subcatchment 11S: AREA JUST BELOW LOOP ROAD
Tc=25.7 min CN=85 Area=8.940 ac Runoff= 29.73 cfs 3.338 af

Subcatchment 12S: AREA WEST OF LOOP ROAD
Tc=35.1 min CN=77 Area=18.730 ac Runoff= 45.12 cfs 5.670 af

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=17.9 min CN=77 Area=18.780 ac Runoff= 60.65 cfs 5.717 af

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY
Tc=17.0 min CN=86 Area=7.960 ac Runoff= 31.91 cfs 3.051 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI
Tc=13.7 min CN=86 Area=7.350 ac Runoff= 31.92 cfs 2.820 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST
Tc=10.9 min CN=84 Area=7.210 ac Runoff= 32.67 cfs 2.639 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 14.84 cfs 1.414 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 43.71 cfs 4.294 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 22.70 cfs 3.268 af

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ
Tc=3.7 min CN=86 Area=4.090 ac Runoff= 24.18 cfs 1.573 af

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD
Tc=18.3 min CN=78 Area=6.950 ac Runoff= 22.82 cfs 2.175 af

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=3.3 min CN=74 Area=7.660 ac Runoff= 34.96 cfs 2.151 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=11.600 ac Runoff= 36.56 cfs 3.057 af

Subcatchment 24S: AREA AROUND LOOP ROAD
Tc=7.7 min CN=79 Area=8.574 ac Runoff= 38.50 cfs 2.765 af

Subcatchment 25S: AREA NEAR LOOP ROAD
Tc=22.7 min CN=79 Area=9.300 ac Runoff= 28.66 cfs 2.985 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=28.7 min CN=72 Area=28.190 ac Runoff= 64.79 cfs 7.387 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=29.4 min CN=73 Area=22.860 ac Runoff= 53.55 cfs 6.174 af

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE
Tc=17.0 min CN=72 Area=8.060 ac Runoff= 23.03 cfs 2.121 af

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE
Tc=15.1 min CN=81 Area=11.600 ac Runoff= 44.09 cfs 3.933 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 24.03 cfs 2.409 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 19.68 cfs 2.578 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 67.95 cfs 8.079 af

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE
Tc=22.6 min CN=78 Area=16.360 ac Runoff= 49.28 cfs 5.112 af

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8
Tc=13.3 min CN=78 Area=3.640 ac Runoff= 13.45 cfs 1.141 af

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD
Tc=17.8 min CN=81 Area=2.210 ac Runoff= 7.87 cfs 0.749 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 19.13 cfs 1.639 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 50.59 cfs 4.444 af

Subcatchment 119S:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 27.37 cfs 3.018 af

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD
Tc=20.5 min CN=74 Area=7.280 ac Runoff= 20.48 cfs 2.032 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=10.8 min CN=72 Area=8.090 ac Runoff= 27.29 cfs 2.133 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=8.1 min CN=72 Area=3.810 ac Runoff= 13.96 cfs 1.006 af

Subcatchment 129S: AIRPORT CENTER DRIVE
Tc=16.4 min CN=82 Area=3.970 ac Runoff= 14.96 cfs 1.380 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=73 Area=31.060 ac Runoff= 64.04 cfs 8.362 af

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE
Tc=12.6 min CN=80 Area=2.690 ac Runoff= 10.67 cfs 0.889 af

Reach 3R: DP3 Inflow= 334.85 cfs 52.284 af
Length= 50.0' Max Vel= 7.7 fps Capacity= 1,521.75 cfs Outflow= 334.71 cfs 52.275 af

Reach 5R: Inflow= 45.55 cfs 6.598 af
Length= 570.0' Max Vel= 9.4 fps Capacity= 60.37 cfs Outflow= 45.41 cfs 6.589 af

Reach 6R: Inflow= 67.87 cfs 10.883 af
Length= 350.0' Max Vel= 2.4 fps Capacity= 148.76 cfs Outflow= 67.80 cfs 10.852 af

Reach 7R: Inflow= 102.51 cfs 15.296 af
Length= 220.0' Max Vel= 4.7 fps Capacity= 504.53 cfs Outflow= 102.12 cfs 15.282 af

Reach 8R: Inflow= 169.33 cfs 23.361 af
Length= 45.0' Max Vel= 12.9 fps Capacity= 217.33 cfs Outflow= 169.29 cfs 23.359 af

Reach 9R: Inflow= 169.29 cfs 23.359 af
Length= 290.0' Max Vel= 4.4 fps Capacity= 278.93 cfs Outflow= 168.55 cfs 23.329 af

Reach 10R: Inflow= 251.60 cfs 42.232 af
Length= 280.0' Max Vel= 5.0 fps Capacity= 316.14 cfs Outflow= 250.98 cfs 42.185 af

Reach 11R: Inflow= 50.40 cfs 8.507 af
Length= 670.0' Max Vel= 10.1 fps Capacity= 27.71 cfs Outflow= 27.79 cfs 8.498 af

Reach 12R: Inflow= 55.66 cfs 10.408 af
Length= 213.0' Max Vel= 13.1 fps Capacity= 56.21 cfs Outflow= 55.61 cfs 10.405 af

Reach 13R: Inflow= 61.95 cfs 7.408 af
Length= 1,205.0' Max Vel= 10.3 fps Capacity= 28.43 cfs Outflow= 28.51 cfs 7.393 af

Reach 14R: Inflow= 18.71 cfs 3.479 af
Length= 703.0' Max Vel= 11.6 fps Capacity= 18.04 cfs Outflow= 18.45 cfs 3.475 af

Reach 15R: Inflow= 40.50 cfs 5.239 af
Length= 22.0' Max Vel= 10.0 fps Capacity= 27.71 cfs Outflow= 30.42 cfs 5.238 af

Reach 16R: Inflow= 23.25 cfs 3.211 af
Length= 390.0' Max Vel= 8.2 fps Capacity= 22.62 cfs Outflow= 22.96 cfs 3.208 af

Reach 17R: Inflow= 24.18 cfs 1.573 af
Length= 465.0' Max Vel= 6.0 fps Capacity= 4.13 cfs Outflow= 4.13 cfs 1.571 af

Reach 18R: Inflow= 20.40 cfs 2.100 af
Length= 200.0' Max Vel= 5.4 fps Capacity= 3.76 cfs Outflow= 3.76 cfs 2.099 af

Reach 19R: Inflow= 23.03 cfs 2.121 af
Length= 1,250.0' Max Vel= 2.9 fps Capacity= 234.10 cfs Outflow= 20.40 cfs 2.100 af

Reach 21R: Inflow= 22.82 cfs 2.175 af
Length= 640.0' Max Vel= 7.2 fps Capacity= 4.93 cfs Outflow= 4.93 cfs 2.171 af

Reach 22R: Inflow= 32.67 cfs 2.639 af
Length= 396.0' Max Vel= 5.9 fps Capacity= 9.17 cfs Outflow= 9.20 cfs 2.636 af

Reach 23R: Inflow= 14.84 cfs 1.414 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 5.80 cfs 1.412 af

Reach 24R: Inflow= 20.09 cfs 2.574 af
Length= 80.0' Max Vel= 5.1 fps Capacity= 3.49 cfs Outflow= 3.49 cfs 2.573 af

Reach 25R: Inflow= 12.69 cfs 5.209 af
Length= 300.0' Max Vel= 4.3 fps Capacity= 11.72 cfs Outflow= 12.55 cfs 5.204 af

Reach 26R: Inflow= 58.47 cfs 12.900 af
Length= 550.0' Max Vel= 4.2 fps Capacity= 18.31 cfs Outflow= 19.03 cfs 12.878 af

Reach 27R: Inflow= 36.85 cfs 4.991 af
Length= 360.0' Max Vel= 5.5 fps Capacity= 11.86 cfs Outflow= 12.19 cfs 4.986 af

Reach 28R: Inflow= 31.76 cfs 14.018 af
Length= 1,330.0' Max Vel= 4.7 fps Capacity= 29.20 cfs Outflow= 30.25 cfs 13.961 af

Reach 29R: Inflow= 228.82 cfs 43.286 af
Length= 212.0' Max Vel= 17.2 fps Capacity= 308.26 cfs Outflow= 228.64 cfs 43.275 af

Reach 30R: Inflow= 46.59 cfs 6.947 af
Length= 628.0' Max Vel= 5.1 fps Capacity= 28.01 cfs Outflow= 29.09 cfs 6.932 af

Reach 31R: Inflow= 22.71 cfs 3.903 af
Length= 1,009.0' Max Vel= 9.5 fps Capacity= 14.69 cfs Outflow= 15.04 cfs 3.896 af

Reach 32R: Inflow= 34.96 cfs 2.151 af
Length= 300.0' Max Vel= 8.6 fps Capacity= 5.93 cfs Outflow= 5.93 cfs 2.149 af

Reach 33R: Inflow= 13.96 cfs 1.006 af
Length= 325.0' Max Vel= 12.5 fps Capacity= 8.90 cfs Outflow= 8.90 cfs 1.005 af

Reach 34R: Inflow= 10.67 cfs 0.889 af
Length= 392.0' Max Vel= 3.2 fps Capacity= 5.03 cfs Outflow= 5.03 cfs 0.887 af

Reach 35R: Inflow= 233.68 cfs 44.163 af
Length= 473.0' Max Vel= 17.3 fps Capacity= 308.11 cfs Outflow= 233.42 cfs 44.141 af

Reach 36R: Inflow= 233.42 cfs 44.141 af
Length= 377.0' Max Vel= 17.3 fps Capacity= 308.22 cfs Outflow= 233.19 cfs 44.124 af

Reach 37R: Inflow= 109.63 cfs 10.866 af
Length= 65.0' Max Vel= 18.4 fps Capacity= 165.55 cfs Outflow= 109.57 cfs 10.865 af

Reach 38R: SWALE Inflow= 49.89 cfs 5.159 af
Length= 690.0' Max Vel= 9.3 fps Capacity= 301.56 cfs Outflow= 49.64 cfs 5.149 af

Reach 39R: Inflow= 49.92 cfs 5.161 af
Length= 255.0' Max Vel= 15.2 fps Capacity= 109.70 cfs Outflow= 49.89 cfs 5.159 af

Reach 40R: CHANNEL Inflow= 464.64 cfs 73.270 af
Length= 820.0' Max Vel= 7.2 fps Capacity= 539.62 cfs Outflow= 462.10 cfs 73.112 af

Reach 41R: SWALE Inflow= 109.57 cfs 10.865 af
Length= 890.0' Max Vel= 5.1 fps Capacity= 570.88 cfs Outflow= 107.46 cfs 10.818 af

Reach 42R: SWALE Inflow= 106.80 cfs 14.739 af
Length= 350.0' Max Vel= 4.7 fps Capacity= 237.55 cfs Outflow= 106.49 cfs 14.715 af

Reach 43R: Inflow= 106.89 cfs 14.742 af
Length= 255.0' Max Vel= 28.3 fps Capacity= 296.25 cfs Outflow= 106.80 cfs 14.739 af

Reach 44R: Inflow= 36.59 cfs 5.743 af
Length= 467.0' Max Vel= 5.9 fps Capacity= 36.45 cfs Outflow= 34.63 cfs 5.734 af

Reach 45R: Inflow= 42.42 cfs 5.745 af
Length= 126.0' Max Vel= 8.0 fps Capacity= 34.38 cfs Outflow= 36.59 cfs 5.743 af

Reach 46R: Inflow= 52.36 cfs 5.748 af
Length= 377.0' Max Vel= 11.6 fps Capacity= 40.58 cfs Outflow= 42.42 cfs 5.745 af

Reach 47R: Inflow= 28.66 cfs 2.985 af
Length= 200.0' Max Vel= 5.0 fps Capacity= 14.00 cfs Outflow= 14.00 cfs 2.983 af

Reach 118R: Inflow= 20.48 cfs 2.032 af
Length= 400.0' Max Vel= 11.0 fps Capacity= 17.16 cfs Outflow= 17.30 cfs 2.031 af

Reach 119R: Inflow= 27.37 cfs 3.018 af
Length= 461.0' Max Vel= 10.1 fps Capacity= 27.72 cfs Outflow= 27.23 cfs 3.015 af

Reach 122R: Inflow= 27.29 cfs 2.133 af
Length= 1,462.0' Max Vel= 3.2 fps Capacity= 263.47 cfs Outflow= 22.73 cfs 2.104 af

Reach 200R: Inflow= 40.34 cfs 3.737 af
Length= 650.0' Max Vel= 4.8 fps Capacity= 95.83 cfs Outflow= 39.52 cfs 3.725 af

Reach 280R: Inflow= 53.55 cfs 6.174 af
Length= 985.0' Max Vel= 2.9 fps Capacity= 711.78 cfs Outflow= 51.69 cfs 6.120 af

Reach DP#1: (new node) Inflow= 557.41 cfs 90.918 af
Outflow= 557.41 cfs 90.918 af

Reach DP#2: DESIGN POINT #2 Inflow= 110.54 cfs 13.507 af
Outflow= 110.54 cfs 13.507 af

Pond 1P: EXISTING POND Peak Storage= 125,253 cf Inflow= 488.32 cfs 79.041 af
Primary= 466.77 cfs 78.831 af Outflow= 466.77 cfs 78.831 af

Runoff Area = 485.774 ac Volume = 157.643 af Average Depth = 3.89"

Subcatchment 1S: AREA NEAR POND

Runoff = 84.91 cfs @ 12.10 hrs, Volume= 5.929 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
10.120	77	Woods, Good, HSG D
1.540	98	Paved parking & roofs
6.240	80	Pasture/grassland/range, Good, HSG D
17.900	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0244	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.4	260	0.0244	3.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	86	0.0488	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	890	0.0150	5.1	102.83	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
6.7	1,386	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 143.93 cfs @ 12.44 hrs, Volume= 18.718 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 45.55 cfs @ 12.65 hrs, Volume= 6.598 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 14.45 cfs @ 12.14 hrs, Volume= 1.162 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD

Runoff = 34.89 cfs @ 12.13 hrs, Volume= 2.709 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.400	74	Pasture/grassland/range, Good, HSG C
3.000	98	Paved parking & roofs
7.400	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	30	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.5	395	0.0730	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	60	0.0330	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
4.5	252	0.0179	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0143	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	800	Total			

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI

Runoff = 38.50 cfs @ 12.24 hrs, Volume= 3.675 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
5.060	98	Paved parking & roofs
5.000	70	Woods, Good, HSG C
10.060	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	150	0.1316	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.5	78	0.1316	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	357	0.0112	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	585	Total			

Subcatchment 9S: AREA NORTH OF D-POND

Runoff = 43.88 cfs @ 12.16 hrs, Volume= 3.612 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.190	98	Paved parking & roofs
5.680	74	Pasture/grassland/range, Good, HSG C
9.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	150	0.0117	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	150	0.0117	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.5	252	0.0050	0.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.6	552	Total			

Subcatchment 10S: area near trailer road

Runoff = 40.34 cfs @ 12.24 hrs, Volume= 3.737 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.000	70	Woods, Good, HSG C
6.090	77	Woods, Good, HSG D
1.130	74	Pasture/grassland/range, Good, HSG C
0.430	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
12.620	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	150	0.1200	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.1	360	0.0556	1.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	60	0.2333	2.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
17.1	1,135	Total			

Subcatchment 11S: AREA JUST BELOW LOOP ROAD

Runoff = 29.73 cfs @ 12.35 hrs, Volume= 3.338 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.210	98	Paved parking & roofs
4.480	74	Pasture/grassland/range, Good, HSG C
0.250	70	Woods, Good, HSG C
8.940	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	150	0.0153	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.3	40	0.0153	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
1.9	200	0.0015	1.7	5.42	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.021
0.6	377	0.0448	10.2	40.58	**Circular Channel (pipe),** Diam= 27.0" Area= 4.0 sf Perim= 7.1' r= 0.56' n= 0.021
0.3	126	0.0183	7.0	34.35	**Circular Channel (pipe),** Diam= 30.0" Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.021
1.5	467	0.0078	5.2	36.47	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
25.7	1,400	Total			

Subcatchment 12S: AREA WEST OF LOOP ROAD

Runoff = 45.12 cfs @ 12.48 hrs, Volume= 5.670 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
6.740	74	Pasture/grassland/range, Good, HSG C
7.940	70	Woods, Good, HSG C
4.050	98	Paved parking & roofs
18.730	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0933	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.2	544	0.0846	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.5	488	0.0861	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	272	0.0411	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	278	0.0791	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1	582	0.0137	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
35.1	2,314	Total			

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 60.65 cfs @ 12.25 hrs, Volume= 5.717 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
7.160	70	Woods, Good, HSG C
3.300	98	Paved parking & roofs
8.320	74	Pasture/grassland/range, Good, HSG C
18.780	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	30	0.2667	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
10.9	120	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.0	190	0.2211	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	1,804	0.0277	7.2	157.55	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=2.00' Z= 3.0 '/' n= 0.040
17.9	2,144	Total			

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY

Runoff = 31.91 cfs @ 12.23 hrs, Volume= 3.051 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
0.260	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
4.080	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	130	0.0308	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.9	220	0.0364	3.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	642	0.0122	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	275	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	619	0.0030	1.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.0	1,886	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI

Runoff = 31.92 cfs @ 12.19 hrs, Volume= 2.820 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.760	74	Pasture/grassland/range, Good, HSG C
3.590	98	Paved parking & roofs
7.350	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0320	1.5		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
5.4	100	0.0797	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.0	470	0.0797	2.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.5	400	0.0725	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0600	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.7	1,070	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST

Runoff = 32.67 cfs @ 12.15 hrs, Volume= 2.639 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.340	74	Pasture/grassland/range, Good, HSG C
2.870	98	Paved parking & roofs
7.210	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	52	0.0310	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.50"
5.6	98	0.0695	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.2	138	0.0695	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	275	0.0580	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	285	0.0910	11.2	112.49	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=2.00' Z= 2.0 '/' n= 0.040
10.9	923	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 14.84 cfs @ 12.23 hrs, Volume= 1.414 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 43.71 cfs @ 12.26 hrs, Volume= 4.294 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 22.70 cfs @ 12.60 hrs, Volume= 3.268 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ

Runoff = 24.18 cfs @ 12.06 hrs, Volume= 1.573 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.810	74	Pasture/grassland/range, Good, HSG C
0.220	70	Woods, Good, HSG C
2.060	98	Paved parking & roofs
4.090	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0267	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	175	0.0457	4.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	475	0.0589	4.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	800	Total			

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD

Runoff = 22.82 cfs @ 12.25 hrs, Volume= 2.175 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
5.070	74	Pasture/grassland/range, Good, HSG C
0.710	70	Woods, Good, HSG C
1.170	98	Paved parking & roofs
6.950	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.9	430	0.1256	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.1500	2.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	164	0.0488	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.3	824	Total			

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 34.96 cfs @ 12.05 hrs, Volume= 2.151 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
2.990	74	Pasture/grassland/range, Good, HSG C
3.900	70	Woods, Good, HSG C
0.770	98	Paved parking & roofs
7.660	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0780	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	670	0.0780	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	536	0.0597	23.6	189.13	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 5.0 '/' n= 0.011
3.3	1,356	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 36.56 cfs @ 12.18 hrs, Volume= 3.057 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
2.360	74	Pasture/grassland/range, Good, HSG C
8.700	70	Woods, Good, HSG C
0.540	98	Paved parking & roofs
11.600	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: AREA AROUND LOOP ROAD

Runoff = 38.50 cfs @ 12.11 hrs, Volume= 2.765 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
6.660	74	Pasture/grassland/range, Good, HSG C
0.084	70	Woods, Good, HSG C
1.830	98	Paved parking & roofs
8.574	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0580	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	84	0.0238	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	204	0.0392	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	128	0.1250	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	240	0.0500	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	70	0.0286	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	876	Total			

Subcatchment 25S: AREA NEAR LOOP ROAD

Runoff = 28.66 cfs @ 12.31 hrs, Volume= 2.985 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.380	74	Pasture/grassland/range, Good, HSG C
2.460	70	Woods, Good, HSG C
2.460	98	Paved parking & roofs
9.300	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	258	0.1938	2.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	190	0.1158	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	202	0.0100	2.8	2.21	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.021
1.6	309	0.0100	3.3	4.00	**Circular Channel (pipe),** Diam= 15.0" Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.021
1.6	358	0.0100	3.7	6.50	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.021
0.5	164	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
22.7	1,631	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 64.79 cfs @ 12.41 hrs, Volume= 7.387 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
20.860	70	Woods, Good, HSG C
0.560	87	Dirt roads, HSG C
6.340	74	Pasture/grassland/range, Good, HSG C
0.430	98	Paved parking & roofs
28.190	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.3	410	0.1756	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	327	0.1407	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	389	0.1131	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.1	985	0.0081	4.0	160.60	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
28.7	2,261	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 53.55 cfs @ 12.41 hrs, Volume= 6.174 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
15.100	70	Woods, Good, HSG C
6.110	74	Pasture/grassland/range, Good, HSG C
1.380	98	Paved parking & roofs
0.270	87	Dirt roads, HSG C
22.860	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	150	0.0133	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.4	38	0.0526	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.5143	3.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	370	0.1514	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	276	0.0435	3.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.0	315	0.1397	2.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
29.4	1,184	Total			

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE

Runoff = 23.03 cfs @ 12.24 hrs, Volume= 2.121 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.960	74	Pasture/grassland/range, Good, HSG C
5.890	70	Woods, Good, HSG C
0.210	98	Paved parking & roofs
8.060	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	36	0.0556	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.3	34	0.5294	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.1	80	0.2667	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	96	0.1563	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,250	0.0194	5.4	130.05	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 5.0 '/' n= 0.040
17.0	1,496	Total			

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE

Runoff = 44.09 cfs @ 12.21 hrs, Volume= 3.933 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
6.180	74	Pasture/grassland/range, Good, HSG C
1.600	70	Woods, Good, HSG C
3.820	98	Paved parking & roofs
11.600	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	115	0.0348	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.4	207	0.1159	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	53	0.2642	2.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	467	0.0557	6.6	52.81	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.00' Z= 4.0 '/' n= 0.040
15.1	842	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 24.03 cfs @ 12.28 hrs, Volume= 2.409 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 19.68 cfs @ 12.53 hrs, Volume= 2.578 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 67.95 cfs @ 12.39 hrs, Volume= 8.079 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE

Runoff = 49.28 cfs @ 12.31 hrs, Volume= 5.112 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
5.810	70	Woods, Good, HSG C
3.740	98	Paved parking & roofs
6.790	74	Pasture/grassland/range, Good, HSG C
16.360	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	150	0.1129	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.9	293	0.1129	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	1,367	0.0432	9.0	325.61	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=2.00' Z= 5.0 '/' n= 0.040
3.0	1,302	0.0292	7.1	428.98	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 10.0 '/' n= 0.040
22.6	3,112	Total			

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8

Runoff = 13.45 cfs @ 12.18 hrs, Volume= 1.141 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
2.960	74	Pasture/grassland/range, Good, HSG C
0.680	98	Paved parking & roofs
3.640	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0767	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	241	0.0767	5.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	477	0.0126	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	583	0.0034	1.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.3	1,451	Total			

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD

Runoff = 7.87 cfs @ 12.24 hrs, Volume= 0.749 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
0.690	98	Paved parking & roofs
1.520	74	Pasture/grassland/range, Good, HSG C
2.210	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.9	272	0.0662	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	470	0.0638	5.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.8	892	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 19.13 cfs @ 12.18 hrs, Volume= 1.639 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 50.59 cfs @ 12.20 hrs, Volume= 4.444 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119S:

Runoff = 27.37 cfs @ 12.33 hrs, Volume= 3.018 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD

Runoff = 20.48 cfs @ 12.29 hrs, Volume= 2.032 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.470	74	Pasture/grassland/range, Good, HSG C
2.430	70	Woods, Good, HSG C
0.380	98	Paved parking & roofs
7.280	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.1	311	0.0643	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	153	0.0915	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	28	0.3571	4.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0116	4.2	84.32	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.040
20.5	714	Total			

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL

Runoff = 27.29 cfs @ 12.16 hrs, Volume= 2.133 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.490	74	Pasture/grassland/range, Good, HSG C
0.200	87	Dirt roads, HSG C
6.250	70	Woods, Good, HSG C
0.150	98	Paved parking & roofs
8.090	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	150	0.0566	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	239	0.0566	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.0	603	0.0829	1.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	1,062	0.0100	9.5	56.73	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 4.0 '/' n= 0.011
10.8	2,054	Total			

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD

Runoff = 13.96 cfs @ 12.12 hrs, Volume= 1.006 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.220	74	Pasture/grassland/range, Good, HSG C
0.047	87	Dirt roads, HSG C
2.530	70	Woods, Good, HSG C
0.013	98	Paved parking & roofs
3.810	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	95	0.2947	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	1,165	0.0100	14.2	284.67	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.011
8.1	1,260	Total			

Subcatchment 129S: AIRPORT CENTER DRIVE

Runoff = 14.96 cfs @ 12.22 hrs, Volume= 1.380 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
2.000	74	Pasture/grassland/range, Good, HSG C
0.490	70	Woods, Good, HSG C
1.480	98	Paved parking & roofs
3.970	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.2076	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	270	0.2076	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.0	980	0.0132	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.4	1,400	Total			

Subcatchment 200S: area along 207

Runoff = 64.04 cfs @ 12.53 hrs, Volume= 8.362 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.820	77	Woods, Good, HSG D
0.860	80	Pasture/grassland/range, Good, HSG D
21.050	70	Woods, Good, HSG C
5.230	74	Pasture/grassland/range, Good, HSG C
2.100	98	Paved parking & roofs
31.060	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0273	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.6	326	0.0273	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	1,680	0.0214	5.8	92.22	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
1.8	650	0.0231	6.0	95.81	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
38.4	2,806	Total			

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE

Runoff = 10.67 cfs @ 12.17 hrs, Volume= 0.889 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
0.620	70	Woods, Good, HSG C
1.280	74	Pasture/grassland/range, Good, HSG C
2.690	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.2	26	0.5350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.5	387	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.6	513	Total			

Reach 3R: DP3

Inflow = 334.85 cfs @ 12.39 hrs, Volume= 52.284 af
Outflow = 334.71 cfs @ 12.39 hrs, Volume= 52.275 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.7 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 0.3 min

Peak Depth= 2.17'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 5R:

Inflow = 45.55 cfs @ 12.65 hrs, Volume= 6.598 af
Outflow = 45.41 cfs @ 12.69 hrs, Volume= 6.589 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.4 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.94'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow = 67.87 cfs @ 12.47 hrs, Volume= 10.883 af
Outflow = 67.80 cfs @ 12.53 hrs, Volume= 10.852 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.4 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 4.8 min

Peak Depth= 2.54'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow = 102.51 cfs @ 12.31 hrs, Volume= 15.296 af
Outflow = 102.12 cfs @ 12.33 hrs, Volume= 15.282 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 1.6 min

Peak Depth= 2.10'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow = 169.33 cfs @ 12.36 hrs, Volume= 23.361 af
Outflow = 169.29 cfs @ 12.37 hrs, Volume= 23.359 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.9 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.5 fps, Avg. Travel Time= 0.1 min

Peak Depth= 3.27'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow = 169.29 cfs @ 12.37 hrs, Volume= 23.359 af
Outflow = 168.55 cfs @ 12.40 hrs, Volume= 23.329 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.4 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 2.4 min

Peak Depth= 3.26'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow = 251.60 cfs @ 12.39 hrs, Volume= 42.232 af
Outflow = 250.98 cfs @ 12.42 hrs, Volume= 42.185 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 2.0 min

Peak Depth= 3.59'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow	=	50.40 cfs @	12.60 hrs,	Volume=	8.507 af
Outflow	=	27.79 cfs @	12.10 hrs,	Volume=	8.498 af, Atten= 45%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 5.8 fps, Avg. Travel Time= 1.9 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R:

Inflow	=	55.66 cfs @	12.36 hrs,	Volume=	10.408 af
Outflow	=	55.61 cfs @	12.37 hrs,	Volume=	10.405 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 6.7 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.03'
Capacity at bank full= 56.21 cfs
30.0" Diameter Pipe n= 0.021 Length= 213.0' Slope= 0.0490 '/'

Reach 13R:

Inflow	=	61.95 cfs @	12.22 hrs,	Volume=	7.408 af
Outflow	=	28.51 cfs @	13.30 hrs,	Volume=	7.393 af, Atten= 54%, Lag= 65.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.3 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 6.0 fps, Avg. Travel Time= 3.3 min

Peak Depth= 2.00'
Capacity at bank full= 28.43 cfs
24.0" Diameter Pipe n= 0.021 Length= 1,205.0' Slope= 0.0412 '/'

Reach 14R:

Inflow	=	18.71 cfs @	12.22 hrs,	Volume=	3.479 af
Outflow	=	18.45 cfs @	12.26 hrs,	Volume=	3.475 af, Atten= 1%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 6.4 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.27'
Capacity at bank full= 18.04 cfs
18.0" Diameter Pipe n= 0.021 Length= 703.0' Slope= 0.0770 '/'

Reach 15R:

Inflow	=	40.50 cfs @	12.22 hrs,	Volume=	5.239 af
Outflow	=	30.42 cfs @	12.83 hrs,	Volume=	5.238 af, Atten= 25%, Lag= 36.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	23.25 cfs @	12.18 hrs,	Volume=	3.211 af
Outflow	=	22.96 cfs @	12.21 hrs,	Volume=	3.208 af, Atten= 1%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.2 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.0 fps, Avg. Travel Time= 1.6 min

Peak Depth= 1.69'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	24.18 cfs @	12.06 hrs,	Volume=	1.573 af
Outflow	=	4.13 cfs @	11.75 hrs,	Volume=	1.571 af, Atten= 83%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 2.1 min

Peak Depth= 1.00'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 18R:

Inflow	=	20.40 cfs @	12.45 hrs,	Volume=	2.100 af
Outflow	=	3.76 cfs @	12.10 hrs,	Volume=	2.099 af, Atten= 82%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.4 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.0 fps, Avg. Travel Time= 0.8 min

Peak Depth= 1.00'
Capacity at bank full= 3.76 cfs
12.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0290 '/'

Reach 19R:

Inflow	=	23.03 cfs @	12.24 hrs,	Volume=	2.121 af
Outflow	=	20.40 cfs @	12.45 hrs,	Volume=	2.100 af, Atten= 11%, Lag= 12.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 7.2 min
Avg. Velocity = 1.4 fps, Avg. Travel Time= 15.1 min

Peak Depth= 0.75'
Capacity at bank full= 234.10 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 1,250.0' Slope= 0.0194 '/'
Side Slope Z-value= 10.0 '/'

Reach 21R:

Inflow	=	22.82 cfs @	12.25 hrs,	Volume=	2.175 af
Outflow	=	4.93 cfs @	11.95 hrs,	Volume=	2.171 af, Atten= 78%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.2 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 2.2 min

Peak Depth= 1.00'
Capacity at bank full= 4.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow	=	32.67 cfs @	12.15 hrs,	Volume=	2.639 af
Outflow	=	9.20 cfs @	11.90 hrs,	Volume=	2.636 af, Atten= 72%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.4 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.50'
Capacity at bank full= 9.17 cfs
18.0" Diameter Pipe n= 0.021 Length= 396.0' Slope= 0.0199 '/'

Reach 23R:

Inflow	=	14.84 cfs @	12.23 hrs, Volume=	1.414 af	
Outflow	=	5.80 cfs @	12.04 hrs, Volume=	1.412 af,	Atten= 61%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 24R:

Inflow	=	20.09 cfs @	12.14 hrs, Volume=	2.574 af	
Outflow	=	3.49 cfs @	11.65 hrs, Volume=	2.573 af,	Atten= 83%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 25R:

Inflow	=	12.69 cfs @	11.90 hrs, Volume=	5.209 af	
Outflow	=	12.55 cfs @	11.95 hrs, Volume=	5.204 af,	Atten= 1%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 1.7 min

Peak Depth= 2.00'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 26R:

Inflow	=	58.47 cfs @	12.13 hrs, Volume=	12.900 af	
Outflow	=	19.03 cfs @	11.75 hrs, Volume=	12.878 af,	Atten= 67%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.2 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 3.0 min

Peak Depth= 2.50'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 27R:

Inflow	=	36.85 cfs @	12.19 hrs,	Volume=	4.991 af
Outflow	=	12.19 cfs @	11.89 hrs,	Volume=	4.986 af, Atten= 67%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.5 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.25'
Capacity at bank full= 11.86 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
15.0" Diameter Pipe n= 0.021 Length= 360.0' Slope= 0.0220 '/'

Reach 28R:

Inflow	=	31.76 cfs @	12.18 hrs,	Volume=	14.018 af
Outflow	=	30.25 cfs @	12.34 hrs,	Volume=	13.961 af, Atten= 5%, Lag= 9.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 3.4 fps, Avg. Travel Time= 6.6 min

Peak Depth= 2.58'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach 29R:

Inflow	=	228.82 cfs @	12.39 hrs,	Volume=	43.286 af
Outflow	=	228.64 cfs @	12.39 hrs,	Volume=	43.275 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.2 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 9.1 fps, Avg. Travel Time= 0.4 min

Peak Depth= 3.21'
Capacity at bank full= 308.26 cfs
60.0" Diameter Pipe n= 0.013 Length= 212.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	46.59 cfs @	12.23 hrs,	Volume=	6.947 af
Outflow	=	29.09 cfs @	12.11 hrs,	Volume=	6.932 af, Atten= 38%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 3.8 min

Peak Depth= 2.00'
Capacity at bank full= 28.01 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.021 Length= 628.0' Slope= 0.0100 '/'

Reach 31R:

Inflow	=	22.71 cfs @	12.24 hrs,	Volume=	3.903 af
Outflow	=	15.04 cfs @	13.14 hrs,	Volume=	3.896 af, Atten= 34%, Lag= 53.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.5 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 3.1 min

Peak Depth= 1.50'
Capacity at bank full= 14.69 cfs
18.0" Diameter Pipe n= 0.021 Length= 1,009.0' Slope= 0.0510 '/'

Reach 32R:

Inflow	=	34.96 cfs @	12.05 hrs,	Volume=	2.151 af
Outflow	=	5.93 cfs @	11.75 hrs,	Volume=	2.149 af, Atten= 83%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.6 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.7 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.00'
Capacity at bank full= 5.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0723 '/'

Reach 33R:

Inflow	=	13.96 cfs @	12.12 hrs,	Volume=	1.006 af
Outflow	=	8.90 cfs @	12.10 hrs,	Volume=	1.005 af, Atten= 36%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.5 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.3 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.00'
Capacity at bank full= 8.90 cfs
12.0" Diameter Pipe n= 0.021 Length= 325.0' Slope= 0.1630 '/'

Reach 34R:

Inflow	=	10.67 cfs @	12.17 hrs,	Volume=	0.889 af
Outflow	=	5.03 cfs @	12.10 hrs,	Volume=	0.887 af, Atten= 53%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.2 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 3.9 min

Peak Depth= 1.50'
Capacity at bank full= 5.03 cfs
18.0" Diameter Pipe n= 0.021 Length= 392.0' Slope= 0.0060 '/'

Reach 35R:

Inflow	=	233.68 cfs @	12.39 hrs,	Volume=	44.163 af
Outflow	=	233.42 cfs @	12.41 hrs,	Volume=	44.141 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.3 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 9.1 fps, Avg. Travel Time= 0.9 min

Peak Depth= 3.26'
Capacity at bank full= 308.11 cfs
60.0" Diameter Pipe n= 0.013 Length= 473.0' Slope= 0.0140 '/'

Reach 36R:

Inflow	=	233.42 cfs @	12.41 hrs,	Volume=	44.141 af
Outflow	=	233.19 cfs @	12.42 hrs,	Volume=	44.124 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.3 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 9.1 fps, Avg. Travel Time= 0.7 min

Peak Depth= 3.25'
Capacity at bank full= 308.22 cfs
60.0" Diameter Pipe n= 0.013 Length= 377.0' Slope= 0.0140 '/'

Reach 37R:

Inflow	=	109.63 cfs @	12.26 hrs,	Volume=	10.866 af
Outflow	=	109.57 cfs @	12.27 hrs,	Volume=	10.865 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.4 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 7.9 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.08'
Capacity at bank full= 165.55 cfs
42.0" Diameter Pipe n= 0.013 Length= 65.0' Slope= 0.0271 '/'

Reach 38R: SWALE

Inflow	=	49.89 cfs @	12.26 hrs,	Volume=	5.159 af
Outflow	=	49.64 cfs @	12.30 hrs,	Volume=	5.149 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.3 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 3.0 min

Peak Depth= 0.83'
Capacity at bank full= 301.56 cfs
4.00' x 2.00' deep channel, n= 0.040 Length= 690.0' Slope= 0.1290 '/'
Side Slope Z-value= 3.0 '/'

Reach 39R:

Inflow	=	49.92 cfs @	12.25 hrs,	Volume=	5.161 af
Outflow	=	49.89 cfs @	12.26 hrs,	Volume=	5.159 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 6.7 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.42'
Capacity at bank full= 109.70 cfs
36.0" Diameter Pipe n= 0.021 Length= 255.0' Slope= 0.0706 '/'

Reach 40R: CHANNEL

Inflow	=	464.64 cfs @	12.39 hrs,	Volume=	73.270 af
Outflow	=	462.10 cfs @	12.45 hrs,	Volume=	73.112 af, Atten= 1%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.2 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 3.5 fps, Avg. Travel Time= 3.9 min

Peak Depth= 3.74'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 109.57 cfs @ 12.27 hrs, Volume= 10.865 af
Outflow = 107.46 cfs @ 12.36 hrs, Volume= 10.818 af, Atten= 2%, Lag= 5.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 7.1 min

Peak Depth= 1.83'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 106.80 cfs @ 12.43 hrs, Volume= 14.739 af
Outflow = 106.49 cfs @ 12.46 hrs, Volume= 14.715 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 3.0 min

Peak Depth= 1.37'
Capacity at bank full= 237.55 cfs
8.00' x 2.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 106.89 cfs @ 12.42 hrs, Volume= 14.742 af
Outflow = 106.80 cfs @ 12.43 hrs, Volume= 14.739 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 28.3 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 12.0 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.45'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 36.59 cfs @ 12.58 hrs, Volume= 5.743 af
Outflow = 34.63 cfs @ 12.60 hrs, Volume= 5.734 af, Atten= 5%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 2.6 min

Peak Depth= 2.35'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	42.42 cfs @	12.33 hrs, Volume=	5.745 af	
Outflow	=	36.59 cfs @	12.58 hrs, Volume=	5.743 af,	Atten= 14%, Lag= 14.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.0 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.2 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.50'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	52.36 cfs @	12.11 hrs, Volume=	5.748 af	
Outflow	=	42.42 cfs @	12.33 hrs, Volume=	5.745 af,	Atten= 19%, Lag= 13.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.6 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.8 fps, Avg. Travel Time= 1.1 min

Peak Depth= 2.25'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Inflow	=	28.66 cfs @	12.31 hrs, Volume=	2.985 af	
Outflow	=	14.00 cfs @	12.15 hrs, Volume=	2.983 af,	Atten= 51%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 1.2 min

Peak Depth= 2.00'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 118R:

Inflow	=	20.48 cfs @	12.29 hrs, Volume=	2.032 af	
Outflow	=	17.30 cfs @	12.25 hrs, Volume=	2.031 af,	Atten= 16%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 1.2 min

Peak Depth= 1.50'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119R:

Inflow	=	27.37 cfs @	12.33 hrs,	Volume=	3.018 af
Outflow	=	27.23 cfs @	12.36 hrs,	Volume=	3.015 af, Atten= 1%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.4 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.62'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 122R:

Inflow	=	27.29 cfs @	12.16 hrs,	Volume=	2.133 af
Outflow	=	22.73 cfs @	12.36 hrs,	Volume=	2.104 af, Atten= 17%, Lag= 12.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.2 fps, Min. Travel Time= 7.5 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 20.6 min

Peak Depth= 0.55'
Capacity at bank full= 263.47 cfs
10.00' x 2.00' deep channel, n= 0.040 Length= 1,462.0' Slope= 0.0218 '/'
Side Slope Z-value= 5.0 '/'

Reach 200R:

Inflow	=	40.34 cfs @	12.24 hrs,	Volume=	3.737 af
Outflow	=	39.52 cfs @	12.31 hrs,	Volume=	3.725 af, Atten= 2%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.8 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 5.2 min

Peak Depth= 1.36'
Capacity at bank full= 95.83 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 650.0' Slope= 0.0231 '/'
Side Slope Z-value= 3.0 '/'

Reach 280R:

Inflow = 53.55 cfs @ 12.41 hrs, Volume= 6.174 af
Outflow = 51.69 cfs @ 12.58 hrs, Volume= 6.120 af, Atten= 3%, Lag= 9.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 5.6 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 13.2 min

Peak Depth= 1.13'
Capacity at bank full= 711.78 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 985.0' Slope= 0.0081 '/'
Side Slope Z-value= 5.0 '/'

Reach DP#1: (new node)

Inflow = 557.41 cfs @ 12.51 hrs, Volume= 90.918 af
Outflow = 557.41 cfs @ 12.51 hrs, Volume= 90.918 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow = 110.54 cfs @ 12.49 hrs, Volume= 13.507 af
Outflow = 110.54 cfs @ 12.49 hrs, Volume= 13.507 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow = 488.32 cfs @ 12.43 hrs, Volume= 79.041 af
Outflow = 466.77 cfs @ 12.53 hrs, Volume= 78.831 af, Atten= 4%, Lag= 6.0 min
Primary = 466.77 cfs @ 12.53 hrs, Volume= 78.831 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 392.17' Storage= 125,253 cf
Plug-Flow detention time= 5.1 min calculated for 78.831 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Culvert
- 4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

50-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=7.00"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=6.7 min CN=80 Area=17.900 ac Runoff= 93.83 cfs 6.580 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 156.21 cfs 20.403 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 51.14 cfs 7.417 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 15.75 cfs 1.272 af

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD
Tc=9.3 min CN=84 Area=7.400 ac Runoff= 38.28 cfs 2.987 af

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI
Tc=17.4 min CN=84 Area=10.060 ac Runoff= 42.25 cfs 4.052 af

Subcatchment 9S: AREA NORTH OF D-POND
Tc=11.6 min CN=84 Area=9.870 ac Runoff= 48.15 cfs 3.982 af

Subcatchment 10S: area near trailer road
Tc=17.1 min CN=76 Area=12.620 ac Runoff= 44.98 cfs 4.176 af

Subcatchment 11S: AREA JUST BELOW LOOP ROAD
Tc=25.7 min CN=85 Area=8.940 ac Runoff= 32.57 cfs 3.674 af

Subcatchment 12S: AREA WEST OF LOOP ROAD
Tc=35.1 min CN=77 Area=18.730 ac Runoff= 50.21 cfs 6.326 af

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=17.9 min CN=77 Area=18.780 ac Runoff= 67.47 cfs 6.378 af

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY
Tc=17.0 min CN=86 Area=7.960 ac Runoff= 34.90 cfs 3.353 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI
Tc=13.7 min CN=86 Area=7.350 ac Runoff= 34.90 cfs 3.098 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST
Tc=10.9 min CN=84 Area=7.210 ac Runoff= 35.85 cfs 2.909 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 16.28 cfs 1.559 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 48.24 cfs 4.757 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 24.91 cfs 3.604 af

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ
Tc=3.7 min CN=86 Area=4.090 ac Runoff= 26.43 cfs 1.729 af

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD
Tc=18.3 min CN=78 Area=6.950 ac Runoff= 25.34 cfs 2.422 af

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=3.3 min CN=74 Area=7.660 ac Runoff= 39.12 cfs 2.412 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=11.600 ac Runoff= 41.13 cfs 3.442 af

Subcatchment 24S: AREA AROUND LOOP ROAD
Tc=7.7 min CN=79 Area=8.574 ac Runoff= 42.63 cfs 3.074 af

Subcatchment 25S: AREA NEAR LOOP ROAD
Tc=22.7 min CN=79 Area=9.300 ac Runoff= 31.75 cfs 3.319 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=28.7 min CN=72 Area=28.190 ac Runoff= 72.89 cfs 8.318 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=29.4 min CN=73 Area=22.860 ac Runoff= 60.11 cfs 6.939 af

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE
Tc=17.0 min CN=72 Area=8.060 ac Runoff= 25.92 cfs 2.388 af

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE
Tc=15.1 min CN=81 Area=11.600 ac Runoff= 48.65 cfs 4.358 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 26.63 cfs 2.678 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 21.97 cfs 2.882 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 74.32 cfs 8.880 af

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE
Tc=22.6 min CN=78 Area=16.360 ac Runoff= 54.71 cfs 5.693 af

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8
Tc=13.3 min CN=78 Area=3.640 ac Runoff= 14.92 cfs 1.270 af

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD
Tc=17.8 min CN=81 Area=2.210 ac Runoff= 8.69 cfs 0.830 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 21.06 cfs 1.813 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 56.05 cfs 4.940 af

Subcatchment 119S:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 29.99 cfs 3.322 af

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD
Tc=20.5 min CN=74 Area=7.280 ac Runoff= 22.94 cfs 2.280 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=10.8 min CN=72 Area=8.090 ac Runoff= 30.70 cfs 2.402 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=8.1 min CN=72 Area=3.810 ac Runoff= 15.70 cfs 1.132 af

Subcatchment 129S: AIRPORT CENTER DRIVE
Tc=16.4 min CN=82 Area=3.970 ac Runoff= 16.47 cfs 1.527 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=73 Area=31.060 ac Runoff= 71.90 cfs 9.399 af

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE
Tc=12.6 min CN=80 Area=2.690 ac Runoff= 11.79 cfs 0.987 af

Reach 3R: DP3
Inflow= 364.65 cfs 58.057 af
Length= 50.0' Max Vel= 8.0 fps Capacity= 1,521.75 cfs Outflow= 364.50 cfs 58.048 af

Reach 5R:
Inflow= 51.14 cfs 7.417 af
Length= 570.0' Max Vel= 9.6 fps Capacity= 60.37 cfs Outflow= 50.98 cfs 7.407 af

Reach 6R:
Inflow= 75.77 cfs 12.165 af
Length= 350.0' Max Vel= 2.5 fps Capacity= 148.76 cfs Outflow= 75.70 cfs 12.131 af

Reach 7R:
Inflow= 114.25 cfs 17.072 af
Length= 220.0' Max Vel= 4.8 fps Capacity= 504.53 cfs Outflow= 113.83 cfs 17.056 af

Reach 8R:
Inflow= 187.23 cfs 25.936 af
Length= 45.0' Max Vel= 13.2 fps Capacity= 217.33 cfs Outflow= 187.19 cfs 25.934 af

Reach 9R: Inflow= 187.19 cfs 25.934 af
Length= 290.0' Max Vel= 4.5 fps Capacity= 278.93 cfs Outflow= 186.38 cfs 25.902 af

Reach 10R: Inflow= 272.11 cfs 46.855 af
Length= 280.0' Max Vel= 5.1 fps Capacity= 316.14 cfs Outflow= 271.39 cfs 46.805 af

Reach 11R: Inflow= 52.62 cfs 9.418 af
Length= 670.0' Max Vel= 10.0 fps Capacity= 27.71 cfs Outflow= 29.25 cfs 9.409 af

Reach 12R: Inflow= 58.15 cfs 11.547 af
Length= 213.0' Max Vel= 13.1 fps Capacity= 56.21 cfs Outflow= 58.10 cfs 11.544 af

Reach 13R: Inflow= 67.55 cfs 8.244 af
Length= 1,205.0' Max Vel= 10.3 fps Capacity= 28.43 cfs Outflow= 28.98 cfs 8.228 af

Reach 14R: Inflow= 20.23 cfs 3.891 af
Length= 703.0' Max Vel= 11.6 fps Capacity= 18.04 cfs Outflow= 18.96 cfs 3.887 af

Reach 15R: Inflow= 40.75 cfs 5.815 af
Length= 22.0' Max Vel= 10.0 fps Capacity= 27.71 cfs Outflow= 27.71 cfs 5.814 af

Reach 16R: Inflow= 25.19 cfs 3.540 af
Length= 390.0' Max Vel= 8.2 fps Capacity= 22.62 cfs Outflow= 23.58 cfs 3.537 af

Reach 17R: Inflow= 26.43 cfs 1.729 af
Length= 465.0' Max Vel= 6.0 fps Capacity= 4.13 cfs Outflow= 4.37 cfs 1.727 af

Reach 18R: Inflow= 23.07 cfs 2.366 af
Length= 200.0' Max Vel= 5.4 fps Capacity= 3.76 cfs Outflow= 3.76 cfs 2.364 af

Reach 19R: Inflow= 25.92 cfs 2.388 af
Length= 1,250.0' Max Vel= 3.0 fps Capacity= 234.10 cfs Outflow= 23.07 cfs 2.366 af

Reach 21R: Inflow= 25.34 cfs 2.422 af
Length= 640.0' Max Vel= 7.1 fps Capacity= 4.93 cfs Outflow= 4.93 cfs 2.418 af

Reach 22R: Inflow= 35.85 cfs 2.909 af
Length= 396.0' Max Vel= 5.9 fps Capacity= 9.17 cfs Outflow= 9.17 cfs 2.906 af

Reach 23R: Inflow= 16.28 cfs 1.559 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 5.67 cfs 1.557 af

Reach 24R: Inflow= 21.39 cfs 2.829 af
Length= 80.0' Max Vel= 5.1 fps Capacity= 3.49 cfs Outflow= 3.60 cfs 2.829 af

Reach 25R: Inflow= 12.66 cfs 5.735 af
Length= 300.0' Max Vel= 4.3 fps Capacity= 11.72 cfs Outflow= 12.59 cfs 5.729 af

Reach 26R: Inflow= 61.86 cfs 14.228 af
Length= 550.0' Max Vel= 4.3 fps Capacity= 18.31 cfs Outflow= 18.90 cfs 14.204 af

Reach 27R: Inflow= 39.83 cfs 5.517 af
Length= 360.0' Max Vel= 5.5 fps Capacity= 11.86 cfs Outflow= 12.01 cfs 5.512 af

Reach 28R: Inflow= 33.23 cfs 15.475 af
Length= 1,330.0' Max Vel= 4.7 fps Capacity= 29.20 cfs Outflow= 31.29 cfs 15.401 af

Reach 29R: Inflow= 244.94 cfs 47.557 af
Length= 212.0' Max Vel= 17.4 fps Capacity= 308.26 cfs Outflow= 244.80 cfs 47.543 af

Reach 30R: Inflow= 49.58 cfs 7.717 af
Length= 628.0' Max Vel= 5.1 fps Capacity= 28.01 cfs Outflow= 28.10 cfs 7.701 af

Reach 31R: Inflow= 23.52 cfs 4.372 af
Length= 1,009.0' Max Vel= 9.5 fps Capacity= 14.69 cfs Outflow= 15.31 cfs 4.364 af

Reach 32R: Inflow= 39.12 cfs 2.412 af
Length= 300.0' Max Vel= 8.6 fps Capacity= 5.93 cfs Outflow= 5.93 cfs 2.411 af

Reach 33R: Inflow= 15.70 cfs 1.132 af
Length= 325.0' Max Vel= 12.8 fps Capacity= 8.90 cfs Outflow= 8.90 cfs 1.132 af

Reach 34R: Inflow= 11.79 cfs 0.987 af
Length= 392.0' Max Vel= 3.2 fps Capacity= 5.03 cfs Outflow= 5.03 cfs 0.985 af

Reach 35R: Inflow= 249.83 cfs 48.528 af
Length= 473.0' Max Vel= 17.5 fps Capacity= 308.11 cfs Outflow= 249.49 cfs 48.503 af

Reach 36R: Inflow= 249.49 cfs 48.503 af
Length= 377.0' Max Vel= 17.5 fps Capacity= 308.22 cfs Outflow= 249.21 cfs 48.482 af

Reach 37R: Inflow= 123.41 cfs 12.178 af
Length= 65.0' Max Vel= 18.9 fps Capacity= 165.55 cfs Outflow= 123.34 cfs 12.177 af

Reach 38R: SWALE Inflow= 56.93 cfs 5.811 af
Length= 690.0' Max Vel= 9.6 fps Capacity= 301.56 cfs Outflow= 56.59 cfs 5.800 af

Reach 39R: Inflow= 56.98 cfs 5.813 af
Length= 255.0' Max Vel= 15.7 fps Capacity= 109.70 cfs Outflow= 56.93 cfs 5.811 af

Reach 40R: CHANNEL Inflow= 503.12 cfs 80.938 af
Length= 820.0' Max Vel= 7.4 fps Capacity= 539.62 cfs Outflow= 500.35 cfs 80.753 af

Reach 41R: SWALE Inflow= 123.34 cfs 12.177 af
Length= 890.0' Max Vel= 5.3 fps Capacity= 570.88 cfs Outflow= 120.95 cfs 12.127 af

Reach 42R: SWALE Inflow= 114.57 cfs 16.372 af
Length= 350.0' Max Vel= 4.8 fps Capacity= 237.55 cfs Outflow= 114.18 cfs 16.347 af

Reach 43R: Inflow= 114.62 cfs 16.375 af
Length= 255.0' Max Vel= 28.8 fps Capacity= 296.25 cfs Outflow= 114.57 cfs 16.372 af

Reach 44R: Inflow= 36.74 cfs 6.384 af
Length= 467.0' Max Vel= 5.9 fps Capacity= 36.45 cfs Outflow= 34.69 cfs 6.375 af

Reach 45R: Inflow= 40.58 cfs 6.386 af
Length= 126.0' Max Vel= 8.0 fps Capacity= 34.38 cfs Outflow= 36.74 cfs 6.384 af

Reach 46R: Inflow= 56.66 cfs 6.390 af
Length= 377.0' Max Vel= 11.6 fps Capacity= 40.58 cfs Outflow= 40.58 cfs 6.386 af

Reach 47R: Inflow= 31.75 cfs 3.319 af
Length= 200.0' Max Vel= 5.1 fps Capacity= 14.00 cfs Outflow= 14.00 cfs 3.316 af

Reach 118R: Inflow= 22.94 cfs 2.280 af
Length= 400.0' Max Vel= 11.1 fps Capacity= 17.16 cfs Outflow= 17.57 cfs 2.278 af

Reach 119R: Inflow= 29.99 cfs 3.322 af
Length= 461.0' Max Vel= 10.1 fps Capacity= 27.72 cfs Outflow= 29.72 cfs 3.319 af

Reach 122R: Inflow= 30.70 cfs 2.402 af
Length= 1,462.0' Max Vel= 3.4 fps Capacity= 263.47 cfs Outflow= 25.75 cfs 2.371 af

Reach 200R: Inflow= 44.98 cfs 4.176 af
Length= 650.0' Max Vel= 4.9 fps Capacity= 95.83 cfs Outflow= 44.07 cfs 4.164 af

Reach 280R: Inflow= 60.11 cfs 6.939 af
Length= 985.0' Max Vel= 3.0 fps Capacity= 711.78 cfs Outflow= 58.13 cfs 6.882 af

Reach DP#1: (new node) Inflow= 612.93 cfs 100.648 af
Outflow= 612.93 cfs 100.648 af

Reach DP#2: DESIGN POINT #2 Inflow= 124.65 cfs 15.200 af
Outflow= 124.65 cfs 15.200 af

Pond 1P: EXISTING POND Peak Storage= 139,071 cf Inflow= 529.84 cfs 87.332 af
Primary= 511.07 cfs 87.085 af Outflow= 511.07 cfs 87.085 af

Runoff Area = 485.774 ac Volume = 174.961 af Average Depth = 4.32"

Subcatchment 1S: AREA NEAR POND

Runoff = 93.83 cfs @ 12.10 hrs, Volume= 6.580 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
10.120	77	Woods, Good, HSG D
1.540	98	Paved parking & roofs
6.240	80	Pasture/grassland/range, Good, HSG D
17.900	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0244	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.4	260	0.0244	3.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	86	0.0488	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	890	0.0150	5.1	102.83	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
6.7	1,386	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 156.21 cfs @ 12.44 hrs, Volume= 20.403 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 51.14 cfs @ 12.65 hrs, Volume= 7.417 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 15.75 cfs @ 12.14 hrs, Volume= 1.272 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD

Runoff = 38.28 cfs @ 12.13 hrs, Volume= 2.987 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.400	74	Pasture/grassland/range, Good, HSG C
3.000	98	Paved parking & roofs
7.400	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	30	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.5	395	0.0730	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	60	0.0330	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
4.5	252	0.0179	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0143	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	800	Total			

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI

Runoff = 42.25 cfs @ 12.23 hrs, Volume= 4.052 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
5.060	98	Paved parking & roofs
5.000	70	Woods, Good, HSG C
10.060	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	150	0.1316	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.5	78	0.1316	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	357	0.0112	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	585	Total			

Subcatchment 9S: AREA NORTH OF D-POND

Runoff = 48.15 cfs @ 12.16 hrs, Volume= 3.982 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.190	98	Paved parking & roofs
5.680	74	Pasture/grassland/range, Good, HSG C
9.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	150	0.0117	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	150	0.0117	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.5	252	0.0050	0.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.6	552	Total			

Subcatchment 10S: area near trailer road

Runoff = 44.98 cfs @ 12.24 hrs, Volume= 4.176 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.000	70	Woods, Good, HSG C
6.090	77	Woods, Good, HSG D
1.130	74	Pasture/grassland/range, Good, HSG C
0.430	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
12.620	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	150	0.1200	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.1	360	0.0556	1.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	60	0.2333	2.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
17.1	1,135	Total			

Subcatchment 11S: AREA JUST BELOW LOOP ROAD

Runoff = 32.57 cfs @ 12.35 hrs, Volume= 3.674 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.210	98	Paved parking & roofs
4.480	74	Pasture/grassland/range, Good, HSG C
0.250	70	Woods, Good, HSG C
8.940	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	150	0.0153	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.3	40	0.0153	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
1.9	200	0.0015	1.7	5.42	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.021
0.6	377	0.0448	10.2	40.58	**Circular Channel (pipe),** Diam= 27.0" Area= 4.0 sf Perim= 7.1' r= 0.56' n= 0.021
0.3	126	0.0183	7.0	34.35	**Circular Channel (pipe),** Diam= 30.0" Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.021
1.5	467	0.0078	5.2	36.47	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
25.7	1,400	Total			

Subcatchment 12S: AREA WEST OF LOOP ROAD

Runoff = 50.21 cfs @ 12.48 hrs, Volume= 6.326 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
6.740	74	Pasture/grassland/range, Good, HSG C
7.940	70	Woods, Good, HSG C
4.050	98	Paved parking & roofs
18.730	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0933	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.2	544	0.0846	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.5	488	0.0861	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	272	0.0411	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	278	0.0791	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1	582	0.0137	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
35.1	2,314	Total			

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 67.47 cfs @ 12.25 hrs, Volume= 6.378 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
7.160	70	Woods, Good, HSG C
3.300	98	Paved parking & roofs
8.320	74	Pasture/grassland/range, Good, HSG C
18.780	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	30	0.2667	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
10.9	120	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.0	190	0.2211	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	1,804	0.0277	7.2	157.55	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=2.00' Z= 3.0 '/' n= 0.040
17.9	2,144	Total			

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY

Runoff = 34.90 cfs @ 12.23 hrs, Volume= 3.353 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
0.260	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
4.080	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	130	0.0308	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.9	220	0.0364	3.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	642	0.0122	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	275	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	619	0.0030	1.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.0	1,886	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI

Runoff = 34.90 cfs @ 12.19 hrs, Volume= 3.098 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.760	74	Pasture/grassland/range, Good, HSG C
3.590	98	Paved parking & roofs
7.350	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0320	1.5		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
5.4	100	0.0797	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.0	470	0.0797	2.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.5	400	0.0725	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0600	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.7	1,070	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST

Runoff = 35.85 cfs @ 12.15 hrs, Volume= 2.909 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.340	74	Pasture/grassland/range, Good, HSG C
2.870	98	Paved parking & roofs
7.210	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	52	0.0310	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.50"
5.6	98	0.0695	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.2	138	0.0695	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	275	0.0580	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	285	0.0910	11.2	112.49	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=2.00' Z= 2.0 '/' n= 0.040
10.9	923	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 16.28 cfs @ 12.23 hrs, Volume= 1.559 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 48.24 cfs @ 12.26 hrs, Volume= 4.757 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 24.91 cfs @ 12.60 hrs, Volume= 3.604 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ

Runoff = 26.43 cfs @ 12.06 hrs, Volume= 1.729 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.810	74	Pasture/grassland/range, Good, HSG C
0.220	70	Woods, Good, HSG C
2.060	98	Paved parking & roofs
4.090	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0267	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	175	0.0457	4.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	475	0.0589	4.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	800	Total			

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD

Runoff = 25.34 cfs @ 12.25 hrs, Volume= 2.422 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
5.070	74	Pasture/grassland/range, Good, HSG C
0.710	70	Woods, Good, HSG C
1.170	98	Paved parking & roofs
6.950	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.9	430	0.1256	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.1500	2.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	164	0.0488	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.3	824	Total			

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 39.12 cfs @ 12.05 hrs, Volume= 2.412 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
2.990	74	Pasture/grassland/range, Good, HSG C
3.900	70	Woods, Good, HSG C
0.770	98	Paved parking & roofs
7.660	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0780	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	670	0.0780	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	536	0.0597	23.6	189.13	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 5.0 '/' n= 0.011
3.3	1,356	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 41.13 cfs @ 12.18 hrs, Volume= 3.442 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
2.360	74	Pasture/grassland/range, Good, HSG C
8.700	70	Woods, Good, HSG C
0.540	98	Paved parking & roofs
11.600	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: AREA AROUND LOOP ROAD

Runoff = 42.63 cfs @ 12.11 hrs, Volume= 3.074 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
6.660	74	Pasture/grassland/range, Good, HSG C
0.084	70	Woods, Good, HSG C
1.830	98	Paved parking & roofs
8.574	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0580	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	84	0.0238	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	204	0.0392	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	128	0.1250	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	240	0.0500	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	70	0.0286	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	876	Total			

Subcatchment 25S: AREA NEAR LOOP ROAD

Runoff = 31.75 cfs @ 12.31 hrs, Volume= 3.319 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.380	74	Pasture/grassland/range, Good, HSG C
2.460	70	Woods, Good, HSG C
2.460	98	Paved parking & roofs
9.300	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	258	0.1938	2.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	190	0.1158	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	202	0.0100	2.8	2.21	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.021
1.6	309	0.0100	3.3	4.00	**Circular Channel (pipe),** Diam= 15.0" Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.021
1.6	358	0.0100	3.7	6.50	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.021
0.5	164	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
22.7	1,631	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 72.89 cfs @ 12.40 hrs, Volume= 8.318 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
20.860	70	Woods, Good, HSG C
0.560	87	Dirt roads, HSG C
6.340	74	Pasture/grassland/range, Good, HSG C
0.430	98	Paved parking & roofs
28.190	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.3	410	0.1756	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	327	0.1407	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	389	0.1131	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.1	985	0.0081	4.0	160.60	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
28.7	2,261	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 60.11 cfs @ 12.41 hrs, Volume= 6.939 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
15.100	70	Woods, Good, HSG C
6.110	74	Pasture/grassland/range, Good, HSG C
1.380	98	Paved parking & roofs
0.270	87	Dirt roads, HSG C
22.860	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	150	0.0133	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.4	38	0.0526	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.5143	3.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	370	0.1514	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	276	0.0435	3.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.0	315	0.1397	2.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
29.4	1,184	Total			

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE

Runoff = 25.92 cfs @ 12.24 hrs, Volume= 2.388 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.960	74	Pasture/grassland/range, Good, HSG C
5.890	70	Woods, Good, HSG C
0.210	98	Paved parking & roofs
8.060	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	36	0.0556	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.3	34	0.5294	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.1	80	0.2667	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	96	0.1563	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,250	0.0194	5.4	130.05	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 5.0 '/' n= 0.040
17.0	1,496	Total			

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE

Runoff = 48.65 cfs @ 12.21 hrs, Volume= 4.358 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
6.180	74	Pasture/grassland/range, Good, HSG C
1.600	70	Woods, Good, HSG C
3.820	98	Paved parking & roofs
11.600	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	115	0.0348	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.4	207	0.1159	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	53	0.2642	2.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	467	0.0557	6.6	52.81	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.00' Z= 4.0 '/' n= 0.040
15.1	842	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 26.63 cfs @ 12.28 hrs, Volume= 2.678 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 21.97 cfs @ 12.52 hrs, Volume= 2.882 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 74.32 cfs @ 12.39 hrs, Volume= 8.880 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE

Runoff = 54.71 cfs @ 12.31 hrs, Volume= 5.693 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
5.810	70	Woods, Good, HSG C
3.740	98	Paved parking & roofs
6.790	74	Pasture/grassland/range, Good, HSG C
16.360	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	150	0.1129	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.9	293	0.1129	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	1,367	0.0432	9.0	325.61	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=2.00' Z= 5.0 '/' n= 0.040
3.0	1,302	0.0292	7.1	428.98	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 10.0 '/' n= 0.040
22.6	3,112	Total			

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8

Runoff = 14.92 cfs @ 12.18 hrs, Volume= 1.270 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
2.960	74	Pasture/grassland/range, Good, HSG C
0.680	98	Paved parking & roofs
3.640	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0767	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	241	0.0767	5.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	477	0.0126	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	583	0.0034	1.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.3	1,451	Total			

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD

Runoff = 8.69 cfs @ 12.24 hrs, Volume= 0.830 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
0.690	98	Paved parking & roofs
1.520	74	Pasture/grassland/range, Good, HSG C
2.210	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.9	272	0.0662	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	470	0.0638	5.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.8	892	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 21.06 cfs @ 12.18 hrs, Volume= 1.813 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 56.05 cfs @ 12.20 hrs, Volume= 4.940 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119S:

Runoff = 29.99 cfs @ 12.33 hrs, Volume= 3.322 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD

Runoff = 22.94 cfs @ 12.28 hrs, Volume= 2.280 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.470	74	Pasture/grassland/range, Good, HSG C
2.430	70	Woods, Good, HSG C
0.380	98	Paved parking & roofs
7.280	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.1	311	0.0643	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	153	0.0915	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	28	0.3571	4.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0116	4.2	84.32	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.040
20.5	714	Total			

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL

Runoff = 30.70 cfs @ 12.15 hrs, Volume= 2.402 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.490	74	Pasture/grassland/range, Good, HSG C
0.200	87	Dirt roads, HSG C
6.250	70	Woods, Good, HSG C
0.150	98	Paved parking & roofs
8.090	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	150	0.0566	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	239	0.0566	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.0	603	0.0829	1.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	1,062	0.0100	9.5	56.73	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 4.0 '/' n= 0.011
10.8	2,054	Total			

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD

Runoff = 15.70 cfs @ 12.12 hrs, Volume= 1.132 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.220	74	Pasture/grassland/range, Good, HSG C
0.047	87	Dirt roads, HSG C
2.530	70	Woods, Good, HSG C
0.013	98	Paved parking & roofs
3.810	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	95	0.2947	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	1,165	0.0100	14.2	284.67	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.011
8.1	1,260	Total			

Subcatchment 129S: AIRPORT CENTER DRIVE

Runoff = 16.47 cfs @ 12.22 hrs, Volume= 1.527 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
2.000	74	Pasture/grassland/range, Good, HSG C
0.490	70	Woods, Good, HSG C
1.480	98	Paved parking & roofs
3.970	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.2076	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	270	0.2076	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.0	980	0.0132	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.4	1,400	Total			

Subcatchment 200S: area along 207

Runoff = 71.90 cfs @ 12.53 hrs, Volume= 9.399 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.820	77	Woods, Good, HSG D
0.860	80	Pasture/grassland/range, Good, HSG D
21.050	70	Woods, Good, HSG C
5.230	74	Pasture/grassland/range, Good, HSG C
2.100	98	Paved parking & roofs
31.060	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0273	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.6	326	0.0273	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	1,680	0.0214	5.8	92.22	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
1.8	650	0.0231	6.0	95.81	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
38.4	2,806	Total			

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE

Runoff = 11.79 cfs @ 12.17 hrs, Volume= 0.987 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
0.620	70	Woods, Good, HSG C
1.280	74	Pasture/grassland/range, Good, HSG C
2.690	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.2	26	0.5350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.5	387	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.6	513	Total			

Reach 3R: DP3

Inflow = 364.65 cfs @ 12.39 hrs, Volume= 58.057 af
Outflow = 364.50 cfs @ 12.39 hrs, Volume= 58.048 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.0 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 0.3 min

Peak Depth= 2.29'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 5R:

Inflow = 51.14 cfs @ 12.65 hrs, Volume= 7.417 af
Outflow = 50.98 cfs @ 12.68 hrs, Volume= 7.407 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 2.0 min

Peak Depth= 2.12'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow = 75.77 cfs @ 12.46 hrs, Volume= 12.165 af
Outflow = 75.70 cfs @ 12.53 hrs, Volume= 12.131 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.5 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 4.7 min

Peak Depth= 2.66'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow = 114.25 cfs @ 12.30 hrs, Volume= 17.072 af
Outflow = 113.83 cfs @ 12.33 hrs, Volume= 17.056 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.8 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 1.6 min

Peak Depth= 2.20'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow = 187.23 cfs @ 12.36 hrs, Volume= 25.936 af
Outflow = 187.19 cfs @ 12.36 hrs, Volume= 25.934 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.2 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.7 fps, Avg. Travel Time= 0.1 min

Peak Depth= 3.54'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow = 187.19 cfs @ 12.36 hrs, Volume= 25.934 af
Outflow = 186.38 cfs @ 12.40 hrs, Volume= 25.902 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.5 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 2.3 min

Peak Depth= 3.40'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow = 272.11 cfs @ 12.39 hrs, Volume= 46.855 af
Outflow = 271.39 cfs @ 12.42 hrs, Volume= 46.805 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 1.9 min

Peak Depth= 3.73'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow	=	52.62 cfs @	12.60 hrs,	Volume=	9.418 af
Outflow	=	29.25 cfs @	14.43 hrs,	Volume=	9.409 af, Atten= 44%, Lag= 110.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 6.0 fps, Avg. Travel Time= 1.9 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R:

Inflow	=	58.15 cfs @	12.36 hrs,	Volume=	11.547 af
Outflow	=	58.10 cfs @	12.37 hrs,	Volume=	11.544 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 7.0 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.14'
Capacity at bank full= 56.21 cfs
30.0" Diameter Pipe n= 0.021 Length= 213.0' Slope= 0.0490 '/'

Reach 13R:

Inflow	=	67.55 cfs @	12.21 hrs,	Volume=	8.244 af
Outflow	=	28.98 cfs @	12.07 hrs,	Volume=	8.228 af, Atten= 57%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.3 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 6.2 fps, Avg. Travel Time= 3.3 min

Peak Depth= 2.00'
Capacity at bank full= 28.43 cfs
24.0" Diameter Pipe n= 0.021 Length= 1,205.0' Slope= 0.0412 '/'

Reach 14R:

Inflow	=	20.23 cfs @	12.22 hrs,	Volume=	3.891 af
Outflow	=	18.96 cfs @	12.22 hrs,	Volume=	3.887 af, Atten= 6%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 6.5 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.50'
Capacity at bank full= 18.04 cfs
18.0" Diameter Pipe n= 0.021 Length= 703.0' Slope= 0.0770 '/'

Reach 15R:

Inflow	=	40.75 cfs @	12.29 hrs,	Volume=	5.815 af
Outflow	=	27.71 cfs @	12.15 hrs,	Volume=	5.814 af, Atten= 32%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 5.3 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	25.19 cfs @	12.18 hrs,	Volume=	3.540 af
Outflow	=	23.58 cfs @	12.29 hrs,	Volume=	3.537 af, Atten= 6%, Lag= 6.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.2 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.1 fps, Avg. Travel Time= 1.6 min

Peak Depth= 2.00'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	26.43 cfs @	12.06 hrs,	Volume=	1.729 af
Outflow	=	4.37 cfs @	14.98 hrs,	Volume=	1.727 af, Atten= 83%, Lag= 175.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.9 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.00'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 18R:

Inflow	=	23.07 cfs @	12.45 hrs, Volume=	2.366 af	
Outflow	=	3.76 cfs @	12.05 hrs, Volume=	2.364 af,	Atten= 84%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.4 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.1 fps, Avg. Travel Time= 0.8 min

Peak Depth= 1.00'
Capacity at bank full= 3.76 cfs
12.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0290 '/'

Reach 19R:

Inflow	=	25.92 cfs @	12.24 hrs, Volume=	2.388 af	
Outflow	=	23.07 cfs @	12.45 hrs, Volume=	2.366 af,	Atten= 11%, Lag= 12.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 7.0 min
Avg. Velocity = 1.4 fps, Avg. Travel Time= 14.9 min

Peak Depth= 0.79'
Capacity at bank full= 234.10 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 1,250.0' Slope= 0.0194 '/'
Side Slope Z-value= 10.0 '/'

Reach 21R:

Inflow	=	25.34 cfs @	12.25 hrs, Volume=	2.422 af	
Outflow	=	4.93 cfs @	11.90 hrs, Volume=	2.418 af,	Atten= 81%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.1 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 4.9 fps, Avg. Travel Time= 2.2 min

Peak Depth= 1.00'
Capacity at bank full= 4.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow	=	35.85 cfs @	12.15 hrs, Volume=	2.909 af	
Outflow	=	9.17 cfs @	11.90 hrs, Volume=	2.906 af,	Atten= 74%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.5 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.50'
Capacity at bank full= 9.17 cfs
18.0" Diameter Pipe n= 0.021 Length= 396.0' Slope= 0.0199 '/'

Reach 23R:

Inflow	=	16.28 cfs @	12.23 hrs,	Volume=	1.559 af
Outflow	=	5.67 cfs @	12.00 hrs,	Volume=	1.557 af, Atten= 65%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 24R:

Inflow	=	21.39 cfs @	12.14 hrs,	Volume=	2.829 af
Outflow	=	3.60 cfs @	11.56 hrs,	Volume=	2.829 af, Atten= 83%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.9 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 25R:

Inflow	=	12.66 cfs @	11.90 hrs,	Volume=	5.735 af
Outflow	=	12.59 cfs @	11.94 hrs,	Volume=	5.729 af, Atten= 1%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 1.7 min

Peak Depth= 2.00'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 26R:

Inflow	=	61.86 cfs @	12.13 hrs,	Volume=	14.228 af
Outflow	=	18.90 cfs @	11.70 hrs,	Volume=	14.204 af, Atten= 69%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 2.9 min

Peak Depth= 2.50'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 27R:

Inflow	=	39.83 cfs @	12.19 hrs,	Volume=	5.517 af
Outflow	=	12.01 cfs @	15.45 hrs,	Volume=	5.512 af, Atten= 70%, Lag= 195.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.6 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.25'
Capacity at bank full= 11.86 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
15.0" Diameter Pipe n= 0.021 Length= 360.0' Slope= 0.0220 '/'

Reach 28R:

Inflow	=	33.23 cfs @	12.18 hrs,	Volume=	15.475 af
Outflow	=	31.29 cfs @	12.34 hrs,	Volume=	15.401 af, Atten= 6%, Lag= 9.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 3.5 fps, Avg. Travel Time= 6.3 min

Peak Depth= 2.76'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach 29R:

Inflow	=	244.94 cfs @	12.39 hrs,	Volume=	47.557 af
Outflow	=	244.80 cfs @	12.40 hrs,	Volume=	47.543 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.4 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 9.4 fps, Avg. Travel Time= 0.4 min

Peak Depth= 3.37'
Capacity at bank full= 308.26 cfs
60.0" Diameter Pipe n= 0.013 Length= 212.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	49.58 cfs @	12.23 hrs,	Volume=	7.717 af
Outflow	=	28.10 cfs @	12.05 hrs,	Volume=	7.701 af, Atten= 43%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 3.6 min

Peak Depth= 2.00'
Capacity at bank full= 28.01 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.021 Length= 628.0' Slope= 0.0100 '/'

Reach 31R:

Inflow	=	23.52 cfs @	12.24 hrs,	Volume=	4.372 af
Outflow	=	15.31 cfs @	12.05 hrs,	Volume=	4.364 af, Atten= 35%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.5 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 5.5 fps, Avg. Travel Time= 3.0 min

Peak Depth= 1.50'
Capacity at bank full= 14.69 cfs
18.0" Diameter Pipe n= 0.021 Length= 1,009.0' Slope= 0.0510 '/'

Reach 32R:

Inflow	=	39.12 cfs @	12.05 hrs,	Volume=	2.412 af
Outflow	=	5.93 cfs @	11.75 hrs,	Volume=	2.411 af, Atten= 85%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.6 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.8 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.00'
Capacity at bank full= 5.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0723 '/'

Reach 33R:

Inflow	=	15.70 cfs @	12.12 hrs,	Volume=	1.132 af
Outflow	=	8.90 cfs @	12.10 hrs,	Volume=	1.132 af, Atten= 43%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.5 fps, Avg. Travel Time= 0.8 min

Peak Depth= 1.00'
Capacity at bank full= 8.90 cfs
12.0" Diameter Pipe n= 0.021 Length= 325.0' Slope= 0.1630 '/'

Reach 34R:

Inflow	=	11.79 cfs @	12.17 hrs,	Volume=	0.987 af
Outflow	=	5.03 cfs @	12.10 hrs,	Volume=	0.985 af, Atten= 57%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.2 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 3.8 min

Peak Depth= 1.50'
Capacity at bank full= 5.03 cfs
18.0" Diameter Pipe n= 0.021 Length= 392.0' Slope= 0.0060 '/'

Reach 35R:

Inflow	=	249.83 cfs @	12.40 hrs,	Volume=	48.528 af
Outflow	=	249.49 cfs @	12.41 hrs,	Volume=	48.503 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.5 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 9.5 fps, Avg. Travel Time= 0.8 min

Peak Depth= 3.42'
Capacity at bank full= 308.11 cfs
60.0" Diameter Pipe n= 0.013 Length= 473.0' Slope= 0.0140 '/'

Reach 36R:

Inflow	=	249.49 cfs @	12.41 hrs,	Volume=	48.503 af
Outflow	=	249.21 cfs @	12.42 hrs,	Volume=	48.482 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.5 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 9.5 fps, Avg. Travel Time= 0.7 min

Peak Depth= 3.41'
Capacity at bank full= 308.22 cfs
60.0" Diameter Pipe n= 0.013 Length= 377.0' Slope= 0.0140 '/'

Reach 37R:

Inflow	=	123.41 cfs @	12.26 hrs,	Volume=	12.178 af
Outflow	=	123.34 cfs @	12.26 hrs,	Volume=	12.177 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.9 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 8.0 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.25'
Capacity at bank full= 165.55 cfs
42.0" Diameter Pipe n= 0.013 Length= 65.0' Slope= 0.0271 '/'

Reach 38R: SWALE

Inflow	=	56.93 cfs @	12.26 hrs,	Volume=	5.811 af
Outflow	=	56.59 cfs @	12.30 hrs,	Volume=	5.800 af, Atten= 1%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.6 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 4.0 fps, Avg. Travel Time= 2.9 min

Peak Depth= 0.89'
Capacity at bank full= 301.56 cfs
4.00' x 2.00' deep channel, n= 0.040 Length= 690.0' Slope= 0.1290 '/'
Side Slope Z-value= 3.0 '/'

Reach 39R:

Inflow	=	56.98 cfs @	12.25 hrs,	Volume=	5.813 af
Outflow	=	56.93 cfs @	12.26 hrs,	Volume=	5.811 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.7 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 6.9 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.53'
Capacity at bank full= 109.70 cfs
36.0" Diameter Pipe n= 0.021 Length= 255.0' Slope= 0.0706 '/'

Reach 40R: CHANNEL

Inflow	=	503.12 cfs @	12.39 hrs,	Volume=	80.938 af
Outflow	=	500.35 cfs @	12.44 hrs,	Volume=	80.753 af, Atten= 1%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.4 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 3.6 fps, Avg. Travel Time= 3.8 min

Peak Depth= 3.87'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 123.34 cfs @ 12.26 hrs, Volume= 12.177 af
Outflow = 120.95 cfs @ 12.35 hrs, Volume= 12.127 af, Atten= 2%, Lag= 5.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.3 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 7.0 min

Peak Depth= 1.94'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 114.57 cfs @ 12.42 hrs, Volume= 16.372 af
Outflow = 114.18 cfs @ 12.46 hrs, Volume= 16.347 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.8 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 2.9 min

Peak Depth= 1.42'
Capacity at bank full= 237.55 cfs
8.00' x 2.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 114.62 cfs @ 12.42 hrs, Volume= 16.375 af
Outflow = 114.57 cfs @ 12.42 hrs, Volume= 16.372 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 28.8 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 12.5 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.51'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 36.74 cfs @ 12.68 hrs, Volume= 6.384 af
Outflow = 34.69 cfs @ 12.70 hrs, Volume= 6.375 af, Atten= 6%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 2.5 min

Peak Depth= 2.35'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	40.58 cfs @	12.10 hrs, Volume=	6.386 af	
Outflow	=	36.74 cfs @	12.68 hrs, Volume=	6.384 af, Atten= 9%, Lag= 34.7 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.0 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.2 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.50'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	56.66 cfs @	12.11 hrs, Volume=	6.390 af	
Outflow	=	40.58 cfs @	12.10 hrs, Volume=	6.386 af, Atten= 28%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.6 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.9 fps, Avg. Travel Time= 1.1 min

Peak Depth= 2.25'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Inflow	=	31.75 cfs @	12.31 hrs, Volume=	3.319 af	
Outflow	=	14.00 cfs @	12.15 hrs, Volume=	3.316 af, Atten= 56%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 1.2 min

Peak Depth= 2.00'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 118R:

Inflow	=	22.94 cfs @	12.28 hrs, Volume=	2.280 af	
Outflow	=	17.57 cfs @	12.70 hrs, Volume=	2.278 af, Atten= 23%, Lag= 25.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.1 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.5 fps, Avg. Travel Time= 1.2 min

Peak Depth= 1.50'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119R:

Inflow	=	29.99 cfs @	12.33 hrs,	Volume=	3.322 af
Outflow	=	29.72 cfs @	12.36 hrs,	Volume=	3.319 af, Atten= 1%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.6 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.86'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 122R:

Inflow	=	30.70 cfs @	12.15 hrs,	Volume=	2.402 af
Outflow	=	25.75 cfs @	12.36 hrs,	Volume=	2.371 af, Atten= 16%, Lag= 12.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.4 fps, Min. Travel Time= 7.3 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 20.0 min

Peak Depth= 0.59'
Capacity at bank full= 263.47 cfs
10.00' x 2.00' deep channel, n= 0.040 Length= 1,462.0' Slope= 0.0218 '/'
Side Slope Z-value= 5.0 '/'

Reach 200R:

Inflow	=	44.98 cfs @	12.24 hrs,	Volume=	4.176 af
Outflow	=	44.07 cfs @	12.30 hrs,	Volume=	4.164 af, Atten= 2%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.9 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 5.1 min

Peak Depth= 1.43'
Capacity at bank full= 95.83 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 650.0' Slope= 0.0231 '/'
Side Slope Z-value= 3.0 '/'

Reach 280R:

Inflow = 60.11 cfs @ 12.41 hrs, Volume= 6.939 af
Outflow = 58.13 cfs @ 12.57 hrs, Volume= 6.882 af, Atten= 3%, Lag= 9.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 5.4 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 12.8 min

Peak Depth= 1.20'
Capacity at bank full= 711.78 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 985.0' Slope= 0.0081 '/'
Side Slope Z-value= 5.0 '/'

Reach DP#1: (new node)

Inflow = 612.93 cfs @ 12.51 hrs, Volume= 100.648 af
Outflow = 612.93 cfs @ 12.51 hrs, Volume= 100.648 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow = 124.65 cfs @ 12.49 hrs, Volume= 15.200 af
Outflow = 124.65 cfs @ 12.49 hrs, Volume= 15.200 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow = 529.84 cfs @ 12.42 hrs, Volume= 87.332 af
Outflow = 511.07 cfs @ 12.51 hrs, Volume= 87.085 af, Atten= 4%, Lag= 5.4 min
Primary = 511.07 cfs @ 12.51 hrs, Volume= 87.085 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 392.65' Storage= 139,071 cf
Plug-Flow detention time= 5.0 min calculated for 86.796 af (99% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Culvert
- 4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

100-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=8.00"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=6.7 min CN=80 Area=17.900 ac Runoff= 111.70 cfs 7.899 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 180.67 cfs 23.776 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 62.49 cfs 9.096 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 18.33 cfs 1.494 af

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD
Tc=9.3 min CN=84 Area=7.400 ac Runoff= 45.04 cfs 3.547 af

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI
Tc=17.4 min CN=84 Area=10.060 ac Runoff= 49.74 cfs 4.812 af

Subcatchment 9S: AREA NORTH OF D-POND
Tc=11.6 min CN=84 Area=9.870 ac Runoff= 56.66 cfs 4.728 af

Subcatchment 10S: area near trailer road
Tc=17.1 min CN=76 Area=12.620 ac Runoff= 54.33 cfs 5.072 af

Subcatchment 11S: AREA JUST BELOW LOOP ROAD
Tc=25.7 min CN=85 Area=8.940 ac Runoff= 38.24 cfs 4.352 af

Subcatchment 12S: AREA WEST OF LOOP ROAD
Tc=35.1 min CN=77 Area=18.730 ac Runoff= 60.46 cfs 7.662 af

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=17.9 min CN=77 Area=18.780 ac Runoff= 81.22 cfs 7.724 af

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY
Tc=17.0 min CN=86 Area=7.960 ac Runoff= 40.85 cfs 3.959 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI
Tc=13.7 min CN=86 Area=7.350 ac Runoff= 40.85 cfs 3.659 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST
Tc=10.9 min CN=84 Area=7.210 ac Runoff= 42.18 cfs 3.455 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 19.17 cfs 1.851 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 57.31 cfs 5.696 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 29.35 cfs 4.282 af

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ
Tc=3.7 min CN=86 Area=4.090 ac Runoff= 30.92 cfs 2.041 af

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD
Tc=18.3 min CN=78 Area=6.950 ac Runoff= 30.40 cfs 2.924 af

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD
Tc=3.3 min CN=74 Area=7.660 ac Runoff= 47.54 cfs 2.947 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=11.600 ac Runoff= 50.42 cfs 4.232 af

Subcatchment 24S: AREA AROUND LOOP ROAD
Tc=7.7 min CN=79 Area=8.574 ac Runoff= 50.94 cfs 3.701 af

Subcatchment 25S: AREA NEAR LOOP ROAD
Tc=22.7 min CN=79 Area=9.300 ac Runoff= 37.97 cfs 3.996 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=28.7 min CN=72 Area=28.190 ac Runoff= 89.39 cfs 10.231 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=29.4 min CN=73 Area=22.860 ac Runoff= 73.43 cfs 8.508 af

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE
Tc=17.0 min CN=72 Area=8.060 ac Runoff= 31.78 cfs 2.937 af

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE
Tc=15.1 min CN=81 Area=11.600 ac Runoff= 57.79 cfs 5.218 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 31.84 cfs 3.225 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 26.55 cfs 3.501 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 87.03 cfs 10.488 af

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE
Tc=22.6 min CN=78 Area=16.360 ac Runoff= 65.65 cfs 6.874 af

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8
Tc=13.3 min CN=78 Area=3.640 ac Runoff= 17.90 cfs 1.534 af

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD
Tc=17.8 min CN=81 Area=2.210 ac Runoff= 10.32 cfs 0.993 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 24.94 cfs 2.165 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 67.00 cfs 5.948 af

Subcatchment 119S:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 35.22 cfs 3.935 af

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD
Tc=20.5 min CN=74 Area=7.280 ac Runoff= 27.92 cfs 2.786 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=10.8 min CN=72 Area=8.090 ac Runoff= 37.63 cfs 2.953 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=8.1 min CN=72 Area=3.810 ac Runoff= 19.24 cfs 1.392 af

Subcatchment 129S: AIRPORT CENTER DRIVE
Tc=16.4 min CN=82 Area=3.970 ac Runoff= 19.51 cfs 1.823 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=73 Area=31.060 ac Runoff= 87.85 cfs 11.524 af

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE
Tc=12.6 min CN=80 Area=2.690 ac Runoff= 14.05 cfs 1.185 af

Reach 3R: DP3 Inflow= 417.79 cfs 69.623 af
Length= 50.0' Max Vel= 8.3 fps Capacity= 1,521.75 cfs Outflow= 417.64 cfs 69.612 af

Reach 5R: Inflow= 62.49 cfs 9.096 af
Length= 570.0' Max Vel= 9.7 fps Capacity= 60.37 cfs Outflow= 62.27 cfs 9.085 af

Reach 6R: Inflow= 91.68 cfs 14.781 af
Length= 350.0' Max Vel= 2.6 fps Capacity= 148.76 cfs Outflow= 91.56 cfs 14.744 af

Reach 7R: Inflow= 137.97 cfs 20.692 af
Length= 220.0' Max Vel= 5.1 fps Capacity= 504.53 cfs Outflow= 137.75 cfs 20.675 af

Reach 8R: Inflow= 223.19 cfs 31.163 af
Length= 45.0' Max Vel= 13.6 fps Capacity= 217.33 cfs Outflow= 223.14 cfs 31.161 af

Reach 9R: Inflow= 223.14 cfs 31.161 af
Length= 290.0' Max Vel= 4.7 fps Capacity= 278.93 cfs Outflow= 222.21 cfs 31.125 af

Reach 10R: Inflow= 306.02 cfs 56.088 af
Length= 280.0' Max Vel= 5.2 fps Capacity= 316.14 cfs Outflow= 305.49 cfs 56.023 af

Reach 11R: Inflow= 57.06 cfs 11.265 af
Length= 670.0' Max Vel= 10.1 fps Capacity= 27.71 cfs Outflow= 27.71 cfs 11.254 af

Reach 12R: Inflow= 56.23 cfs 13.715 af
Length= 213.0' Max Vel= 13.1 fps Capacity= 56.21 cfs Outflow= 56.26 cfs 13.709 af

Reach 13R: Inflow= 75.86 cfs 9.819 af
Length= 1,205.0' Max Vel= 10.3 fps Capacity= 28.43 cfs Outflow= 29.35 cfs 9.784 af

Reach 14R: Inflow= 23.27 cfs 4.615 af
Length= 703.0' Max Vel= 11.6 fps Capacity= 18.04 cfs Outflow= 18.04 cfs 4.602 af

Reach 15R: Inflow= 39.79 cfs 6.984 af
Length= 22.0' Max Vel= 10.0 fps Capacity= 27.71 cfs Outflow= 27.71 cfs 6.984 af

Reach 16R: Inflow= 29.07 cfs 4.203 af
Length= 390.0' Max Vel= 8.2 fps Capacity= 22.62 cfs Outflow= 22.82 cfs 4.200 af

Reach 17R: Inflow= 30.92 cfs 2.041 af
Length= 465.0' Max Vel= 6.0 fps Capacity= 4.13 cfs Outflow= 4.13 cfs 2.038 af

Reach 18R: Inflow= 28.55 cfs 2.912 af
Length= 200.0' Max Vel= 5.4 fps Capacity= 3.76 cfs Outflow= 3.87 cfs 2.792 af

Reach 19R: Inflow= 31.78 cfs 2.937 af
Length= 1,250.0' Max Vel= 3.1 fps Capacity= 234.10 cfs Outflow= 28.55 cfs 2.912 af

Reach 21R: Inflow= 30.40 cfs 2.924 af
Length= 640.0' Max Vel= 7.2 fps Capacity= 4.93 cfs Outflow= 4.93 cfs 2.920 af

Reach 22R: Inflow= 42.18 cfs 3.455 af
Length= 396.0' Max Vel= 5.9 fps Capacity= 9.17 cfs Outflow= 9.17 cfs 3.451 af

Reach 23R: Inflow= 19.17 cfs 1.851 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 6.03 cfs 1.849 af

Reach 24R: Inflow= 23.97 cfs 3.343 af
Length= 80.0' Max Vel= 5.1 fps Capacity= 3.49 cfs Outflow= 3.68 cfs 2.999 af

Reach 25R: Inflow= 12.66 cfs 6.450 af
Length= 300.0' Max Vel= 4.2 fps Capacity= 11.72 cfs Outflow= 12.57 cfs 6.435 af

Reach 26R: Inflow= 68.62 cfs 16.555 af
Length= 550.0' Max Vel= 4.3 fps Capacity= 18.31 cfs Outflow= 19.40 cfs 15.329 af

Reach 27R: Inflow= 45.78 cfs 6.579 af
Length= 360.0' Max Vel= 5.5 fps Capacity= 11.86 cfs Outflow= 11.93 cfs 6.573 af

Reach 28R: Inflow= 36.21 cfs 16.862 af
Length= 1,330.0' Max Vel= 4.7 fps Capacity= 29.20 cfs Outflow= 30.87 cfs 16.611 af

Reach 29R: Inflow= 272.83 cfs 54.462 af
Length= 212.0' Max Vel= 17.7 fps Capacity= 308.26 cfs Outflow= 272.70 cfs 54.438 af

Reach 30R: Inflow= 55.54 cfs 9.280 af
Length= 628.0' Max Vel= 5.1 fps Capacity= 28.01 cfs Outflow= 28.50 cfs 9.262 af

Reach 31R: Inflow= 25.16 cfs 5.330 af
Length= 1,009.0' Max Vel= 9.5 fps Capacity= 14.69 cfs Outflow= 15.36 cfs 5.321 af

Reach 32R: Inflow= 47.54 cfs 2.947 af
Length= 300.0' Max Vel= 8.5 fps Capacity= 5.93 cfs Outflow= 5.93 cfs 2.946 af

Reach 33R: Inflow= 19.24 cfs 1.392 af
Length= 325.0' Max Vel= 12.7 fps Capacity= 8.90 cfs Outflow= 8.90 cfs 1.391 af

Reach 34R: Inflow= 14.05 cfs 1.185 af
Length= 392.0' Max Vel= 3.2 fps Capacity= 5.03 cfs Outflow= 5.07 cfs 1.183 af

Reach 35R: Inflow= 277.74 cfs 55.620 af
Length= 473.0' Max Vel= 17.8 fps Capacity= 308.11 cfs Outflow= 277.43 cfs 55.573 af

Reach 36R: Inflow= 277.43 cfs 55.573 af
Length= 377.0' Max Vel= 17.8 fps Capacity= 308.22 cfs Outflow= 277.13 cfs 55.536 af

Reach 37R: Inflow= 151.45 cfs 14.861 af
Length= 65.0' Max Vel= 19.5 fps Capacity= 165.55 cfs Outflow= 151.36 cfs 14.860 af

Reach 38R: SWALE Inflow= 71.39 cfs 7.149 af
Length= 690.0' Max Vel= 10.3 fps Capacity= 301.56 cfs Outflow= 70.88 cfs 7.137 af

Reach 39R: Inflow= 71.49 cfs 7.151 af
Length= 255.0' Max Vel= 16.5 fps Capacity= 109.70 cfs Outflow= 71.39 cfs 7.149 af

Reach 40R: CHANNEL Inflow= 576.25 cfs 94.729 af
Length= 820.0' Max Vel= 7.6 fps Capacity= 539.62 cfs Outflow= 573.04 cfs 94.450 af

Reach 41R: SWALE Inflow= 151.36 cfs 14.860 af
Length= 890.0' Max Vel= 5.6 fps Capacity= 570.88 cfs Outflow= 148.38 cfs 14.805 af

Reach 42R: SWALE Inflow= 130.09 cfs 19.688 af
Length= 350.0' Max Vel= 5.0 fps Capacity= 237.55 cfs Outflow= 129.63 cfs 19.660 af

Reach 43R: Inflow= 130.15 cfs 19.691 af
Length= 255.0' Max Vel= 29.8 fps Capacity= 296.25 cfs Outflow= 130.09 cfs 19.688 af

Reach 44R: Inflow= 34.38 cfs 7.688 af
Length= 467.0' Max Vel= 5.9 fps Capacity= 36.45 cfs Outflow= 34.39 cfs 7.677 af

Reach 45R: Inflow= 43.30 cfs 7.690 af
Length= 126.0' Max Vel= 7.9 fps Capacity= 34.38 cfs Outflow= 34.38 cfs 7.688 af

Reach 46R: Inflow= 64.95 cfs 7.694 af
Length= 377.0' Max Vel= 11.6 fps Capacity= 40.58 cfs Outflow= 43.30 cfs 7.690 af

Reach 47R: Inflow= 37.97 cfs 3.996 af
Length= 200.0' Max Vel= 5.1 fps Capacity= 14.00 cfs Outflow= 14.09 cfs 3.994 af

Reach 118R: Inflow= 27.92 cfs 2.786 af
Length= 400.0' Max Vel= 11.0 fps Capacity= 17.16 cfs Outflow= 17.16 cfs 2.784 af

Reach 119R: Inflow= 35.22 cfs 3.935 af
Length= 461.0' Max Vel= 10.1 fps Capacity= 27.72 cfs Outflow= 27.80 cfs 3.931 af

Reach 122R: Inflow= 37.63 cfs 2.953 af
Length= 1,462.0' Max Vel= 3.6 fps Capacity= 263.47 cfs Outflow= 31.96 cfs 2.920 af

Reach 200R: Inflow= 54.33 cfs 5.072 af
Length= 650.0' Max Vel= 5.2 fps Capacity= 95.83 cfs Outflow= 53.25 cfs 5.059 af

Reach 280R: Inflow= 73.43 cfs 8.508 af
Length= 985.0' Max Vel= 3.2 fps Capacity= 711.78 cfs Outflow= 71.15 cfs 8.444 af

Reach DP#1: (new node) Inflow= 718.29 cfs 118.592 af
Outflow= 718.29 cfs 118.592 af

Reach DP#2: DESIGN POINT #2 Inflow= 153.43 cfs 18.674 af
Outflow= 153.43 cfs 18.674 af

Pond 1P: EXISTING POND Peak Storage= 159,457 cf Inflow= 608.66 cfs 102.349 af
Primary= 593.31 cfs 102.010 af Outflow= 593.31 cfs 102.010 af

Runoff Area = 485.774 ac Volume = 210.124 af Average Depth = 5.19"

Subcatchment 1S: AREA NEAR POND

Runoff = 111.70 cfs @ 12.10 hrs, Volume= 7.899 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
10.120	77	Woods, Good, HSG D
1.540	98	Paved parking & roofs
6.240	80	Pasture/grassland/range, Good, HSG D
17.900	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0244	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.4	260	0.0244	3.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	86	0.0488	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	890	0.0150	5.1	102.83	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
6.7	1,386	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 180.67 cfs @ 12.44 hrs, Volume= 23.776 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 62.49 cfs @ 12.65 hrs, Volume= 9.096 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 18.33 cfs @ 12.14 hrs, Volume= 1.494 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: AREA NORTH WEST OF BREUNIG & INTERNATIONAL BLVD

Runoff = 45.04 cfs @ 12.13 hrs, Volume= 3.547 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.400	74	Pasture/grassland/range, Good, HSG C
3.000	98	Paved parking & roofs
7.400	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	30	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.5	395	0.0730	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	60	0.0330	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
4.5	252	0.0179	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.0143	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	800	Total			

Subcatchment 8S: NORTH PORTION OF LAND BETWEEN BREUNIG & TROZZOLI

Runoff = 49.74 cfs @ 12.23 hrs, Volume= 4.812 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
5.060	98	Paved parking & roofs
5.000	70	Woods, Good, HSG C
10.060	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	150	0.1316	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.5	78	0.1316	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	357	0.0112	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	585	Total			

Subcatchment 9S: AREA NORTH OF D-POND

Runoff = 56.66 cfs @ 12.16 hrs, Volume= 4.728 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.190	98	Paved parking & roofs
5.680	74	Pasture/grassland/range, Good, HSG C
9.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	150	0.0117	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	150	0.0117	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.5	252	0.0050	0.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.6	552	Total			

Subcatchment 10S: area near trailer road

Runoff = 54.33 cfs @ 12.23 hrs, Volume= 5.072 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.000	70	Woods, Good, HSG C
6.090	77	Woods, Good, HSG D
1.130	74	Pasture/grassland/range, Good, HSG C
0.430	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
12.620	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	150	0.1200	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.1	360	0.0556	1.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	60	0.2333	2.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
17.1	1,135	Total			

Subcatchment 11S: AREA JUST BELOW LOOP ROAD

Runoff = 38.24 cfs @ 12.34 hrs, Volume= 4.352 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.210	98	Paved parking & roofs
4.480	74	Pasture/grassland/range, Good, HSG C
0.250	70	Woods, Good, HSG C
8.940	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	150	0.0153	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.3	40	0.0153	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
1.9	200	0.0015	1.7	5.42	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.021
0.6	377	0.0448	10.2	40.58	**Circular Channel (pipe),** Diam= 27.0" Area= 4.0 sf Perim= 7.1' r= 0.56' n= 0.021
0.3	126	0.0183	7.0	34.35	**Circular Channel (pipe),** Diam= 30.0" Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.021
1.5	467	0.0078	5.2	36.47	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
25.7	1,400	Total			

Subcatchment 12S: AREA WEST OF LOOP ROAD

Runoff = 60.46 cfs @ 12.48 hrs, Volume= 7.662 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
6.740	74	Pasture/grassland/range, Good, HSG C
7.940	70	Woods, Good, HSG C
4.050	98	Paved parking & roofs
18.730	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0933	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.2	544	0.0846	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.5	488	0.0861	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	272	0.0411	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	278	0.0791	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1	582	0.0137	2.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
35.1	2,314	Total			

Subcatchment 13S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 81.22 cfs @ 12.24 hrs, Volume= 7.724 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
7.160	70	Woods, Good, HSG C
3.300	98	Paved parking & roofs
8.320	74	Pasture/grassland/range, Good, HSG C
18.780	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	30	0.2667	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
10.9	120	0.0500	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.0	190	0.2211	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	1,804	0.0277	7.2	157.55	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=2.00' Z= 3.0 '/' n= 0.040
17.9	2,144	Total			

Subcatchment 14S: AREA BETWEEN BILL LARKEN AND WORLD TRADE WAY

Runoff = 40.85 cfs @ 12.23 hrs, Volume= 3.959 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
0.260	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
4.080	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	130	0.0308	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.9	220	0.0364	3.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	642	0.0122	2.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	275	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	619	0.0030	1.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.0	1,886	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN AND TROZZOLI

Runoff = 40.85 cfs @ 12.18 hrs, Volume= 3.659 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.760	74	Pasture/grassland/range, Good, HSG C
3.590	98	Paved parking & roofs
7.350	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0320	1.5		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
5.4	100	0.0797	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.0	470	0.0797	2.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.5	400	0.0725	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0600	5.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.7	1,070	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE AND REED ST

Runoff = 42.18 cfs @ 12.15 hrs, Volume= 3.455 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.340	74	Pasture/grassland/range, Good, HSG C
2.870	98	Paved parking & roofs
7.210	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	52	0.0310	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.50"
5.6	98	0.0695	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.2	138	0.0695	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	275	0.0580	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	285	0.0910	11.2	112.49	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=2.00' Z= 2.0 '/' n= 0.040
10.9	923	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 19.17 cfs @ 12.23 hrs, Volume= 1.851 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 57.31 cfs @ 12.26 hrs, Volume= 5.696 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 29.35 cfs @ 12.59 hrs, Volume= 4.282 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA NORTH OF INTERNATIONAL BLVD AND RAZ

Runoff = 30.92 cfs @ 12.06 hrs, Volume= 2.041 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.810	74	Pasture/grassland/range, Good, HSG C
0.220	70	Woods, Good, HSG C
2.060	98	Paved parking & roofs
4.090	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0267	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	175	0.0457	4.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	475	0.0589	4.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	800	Total			

Subcatchment 21S: AREA WEST OF INTERNATIONAL BLVD

Runoff = 30.40 cfs @ 12.25 hrs, Volume= 2.924 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
5.070	74	Pasture/grassland/range, Good, HSG C
0.710	70	Woods, Good, HSG C
1.170	98	Paved parking & roofs
6.950	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.9	430	0.1256	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.1500	2.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	164	0.0488	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.3	824	Total			

Subcatchment 22S: EAST SIDE OF HUDSON VALLEY ROAD

Runoff = 47.54 cfs @ 12.05 hrs, Volume= 2.947 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
2.990	74	Pasture/grassland/range, Good, HSG C
3.900	70	Woods, Good, HSG C
0.770	98	Paved parking & roofs
7.660	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0780	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	670	0.0780	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	536	0.0597	23.6	189.13	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 5.0 '/' n= 0.011
3.3	1,356	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 50.42 cfs @ 12.18 hrs, Volume= 4.232 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
2.360	74	Pasture/grassland/range, Good, HSG C
8.700	70	Woods, Good, HSG C
0.540	98	Paved parking & roofs
11.600	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: AREA AROUND LOOP ROAD

Runoff = 50.94 cfs @ 12.11 hrs, Volume= 3.701 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
6.660	74	Pasture/grassland/range, Good, HSG C
0.084	70	Woods, Good, HSG C
1.830	98	Paved parking & roofs
8.574	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0580	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	84	0.0238	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	204	0.0392	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	128	0.1250	2.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.6	240	0.0500	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	70	0.0286	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	876	Total			

Subcatchment 25S: AREA NEAR LOOP ROAD

Runoff = 37.97 cfs @ 12.31 hrs, Volume= 3.996 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.380	74	Pasture/grassland/range, Good, HSG C
2.460	70	Woods, Good, HSG C
2.460	98	Paved parking & roofs
9.300	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	258	0.1938	2.2		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	190	0.1158	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	202	0.0100	2.8	2.21	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.021
1.6	309	0.0100	3.3	4.00	**Circular Channel (pipe),** Diam= 15.0" Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.021
1.6	358	0.0100	3.7	6.50	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.021
0.5	164	0.0200	5.8	13.87	**Circular Channel (pipe),** Diam= 21.0" Area= 2.4 sf Perim= 5.5' r= 0.44' n= 0.021
22.7	1,631	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 89.39 cfs @ 12.40 hrs, Volume= 10.231 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
20.860	70	Woods, Good, HSG C
0.560	87	Dirt roads, HSG C
6.340	74	Pasture/grassland/range, Good, HSG C
0.430	98	Paved parking & roofs
28.190	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.1067	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.3	410	0.1756	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	327	0.1407	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	389	0.1131	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.1	985	0.0081	4.0	160.60	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
28.7	2,261	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 73.43 cfs @ 12.41 hrs, Volume= 8.508 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
15.100	70	Woods, Good, HSG C
6.110	74	Pasture/grassland/range, Good, HSG C
1.380	98	Paved parking & roofs
0.270	87	Dirt roads, HSG C
22.860	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	150	0.0133	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.4	38	0.0526	1.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.5143	3.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	370	0.1514	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	276	0.0435	3.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.0	315	0.1397	2.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
29.4	1,184	Total			

Subcatchment 29S: EAST SIDE OF AIRPORT DRIVE

Runoff = 31.78 cfs @ 12.24 hrs, Volume= 2.937 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.960	74	Pasture/grassland/range, Good, HSG C
5.890	70	Woods, Good, HSG C
0.210	98	Paved parking & roofs
8.060	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	36	0.0556	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.3	34	0.5294	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.1	80	0.2667	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.8	96	0.1563	2.0		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,250	0.0194	5.4	130.05	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 5.0 '/' n= 0.040
17.0	1,496	Total			

Subcatchment 30S: AREA AT INTERSECTION OF AIRPORT DRIVE

Runoff = 57.79 cfs @ 12.20 hrs, Volume= 5.218 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
6.180	74	Pasture/grassland/range, Good, HSG C
1.600	70	Woods, Good, HSG C
3.820	98	Paved parking & roofs
11.600	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	115	0.0348	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.4	207	0.1159	2.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	53	0.2642	2.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	467	0.0557	6.6	52.81	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.00' Z= 4.0 '/' n= 0.040
15.1	842	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 31.84 cfs @ 12.28 hrs, Volume= 3.225 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 26.55 cfs @ 12.52 hrs, Volume= 3.501 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 87.03 cfs @ 12.39 hrs, Volume= 10.488 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34S: AREA WEST SIDE OF AIRPORT DRIVE

Runoff = 65.65 cfs @ 12.31 hrs, Volume= 6.874 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
5.810	70	Woods, Good, HSG C
3.740	98	Paved parking & roofs
6.790	74	Pasture/grassland/range, Good, HSG C
16.360	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	150	0.1129	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.9	293	0.1129	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	1,367	0.0432	9.0	325.61	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=2.00' Z= 5.0 '/' n= 0.040
3.0	1,302	0.0292	7.1	428.98	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 10.0 '/' n= 0.040
22.6	3,112	Total			

Subcatchment 108S: SOUTH OF SUBCATCHMENT 8

Runoff = 17.90 cfs @ 12.18 hrs, Volume= 1.534 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
2.960	74	Pasture/grassland/range, Good, HSG C
0.680	98	Paved parking & roofs
3.640	78	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0767	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	241	0.0767	5.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	477	0.0126	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	583	0.0034	1.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.3	1,451	Total			

Subcatchment 113S: TRIANGLE SHAPED AREA NEAR END OF HUDSON VALLEY ROAD

Runoff = 10.32 cfs @ 12.24 hrs, Volume= 0.993 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
0.690	98	Paved parking & roofs
1.520	74	Pasture/grassland/range, Good, HSG C
2.210	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.9	272	0.0662	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	470	0.0638	5.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.8	892	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 24.94 cfs @ 12.18 hrs, Volume= 2.165 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 67.00 cfs @ 12.20 hrs, Volume= 5.948 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119S:

Runoff = 35.22 cfs @ 12.33 hrs, Volume= 3.935 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121S: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD

Runoff = 27.92 cfs @ 12.28 hrs, Volume= 2.786 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.470	74	Pasture/grassland/range, Good, HSG C
2.430	70	Woods, Good, HSG C
0.380	98	Paved parking & roofs
7.280	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.1	311	0.0643	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	153	0.0915	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	28	0.3571	4.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0116	4.2	84.32	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.040
20.5	714	Total			

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL

Runoff = 37.63 cfs @ 12.15 hrs, Volume= 2.953 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.490	74	Pasture/grassland/range, Good, HSG C
0.200	87	Dirt roads, HSG C
6.250	70	Woods, Good, HSG C
0.150	98	Paved parking & roofs
8.090	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	150	0.0566	2.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	239	0.0566	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.0	603	0.0829	1.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	1,062	0.0100	9.5	56.73	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 4.0 '/' n= 0.011
10.8	2,054	Total			

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD

Runoff = 19.24 cfs @ 12.12 hrs, Volume= 1.392 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.220	74	Pasture/grassland/range, Good, HSG C
0.047	87	Dirt roads, HSG C
2.530	70	Woods, Good, HSG C
0.013	98	Paved parking & roofs
3.810	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	95	0.2947	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	1,165	0.0100	14.2	284.67	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 4.0 '/' n= 0.011
8.1	1,260	Total			

Subcatchment 129S: AIRPORT CENTER DRIVE

Runoff = 19.51 cfs @ 12.22 hrs, Volume= 1.823 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
2.000	74	Pasture/grassland/range, Good, HSG C
0.490	70	Woods, Good, HSG C
1.480	98	Paved parking & roofs
3.970	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.2076	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	270	0.2076	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.0	980	0.0132	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.4	1,400	Total			

Subcatchment 200S: area along 207

Runoff = 87.85 cfs @ 12.53 hrs, Volume= 11.524 af

Runoff by SCS TR-20 method, UH=SCS; Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.820	77	Woods, Good, HSG D
0.860	80	Pasture/grassland/range, Good, HSG D
21.050	70	Woods, Good, HSG C
5.230	74	Pasture/grassland/range, Good, HSG C
2.100	98	Paved parking & roofs
31.060	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0273	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.6	326	0.0273	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	1,680	0.0214	5.8	92.22	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
1.8	650	0.0231	6.0	95.81	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
38.4	2,806	Total			

Subcatchment 213S: SMALL AREA NEAR INT. OF AVENUE OF AMERICAS & BILL LARKIN DRIVE

Runoff = 14.05 cfs @ 12.17 hrs, Volume= 1.185 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
0.790	98	Paved parking & roofs
0.620	70	Woods, Good, HSG C
1.280	74	Pasture/grassland/range, Good, HSG C
2.690	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.2	26	0.5350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
4.5	387	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.6	513	Total			

Reach 3R: DP3

Inflow = 417.79 cfs @ 12.38 hrs, Volume= 69.623 af
Outflow = 417.64 cfs @ 12.38 hrs, Volume= 69.612 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.3 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.3 fps, Avg. Travel Time= 0.3 min

Peak Depth= 2.50'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 5R:

Inflow = 62.49 cfs @ 12.65 hrs, Volume= 9.096 af
Outflow = 62.27 cfs @ 12.68 hrs, Volume= 9.085 af, Atten= 0%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.7 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 1.9 min

Peak Depth= 2.56'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow = 91.68 cfs @ 12.46 hrs, Volume= 14.781 af
Outflow = 91.56 cfs @ 12.52 hrs, Volume= 14.744 af, Atten= 0%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.6 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 4.5 min

Peak Depth= 2.88'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow = 137.97 cfs @ 12.30 hrs, Volume= 20.692 af
Outflow = 137.75 cfs @ 12.32 hrs, Volume= 20.675 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 1.5 min

Peak Depth= 2.37'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow = 223.19 cfs @ 12.36 hrs, Volume= 31.163 af
Outflow = 223.14 cfs @ 12.36 hrs, Volume= 31.161 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.6 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.2 fps, Avg. Travel Time= 0.1 min

Peak Depth= 4.09'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow = 223.14 cfs @ 12.36 hrs, Volume= 31.161 af
Outflow = 222.21 cfs @ 12.39 hrs, Volume= 31.125 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 2.1 min

Peak Depth= 3.65'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow = 306.02 cfs @ 12.39 hrs, Volume= 56.088 af
Outflow = 305.49 cfs @ 12.42 hrs, Volume= 56.023 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 1.8 min

Peak Depth= 3.94'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow	=	57.06 cfs @	12.59 hrs,	Volume=	11.265 af
Outflow	=	27.71 cfs @	12.05 hrs,	Volume=	11.254 af, Atten= 51%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 6.3 fps, Avg. Travel Time= 1.8 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R:

Inflow	=	56.23 cfs @	12.25 hrs,	Volume=	13.715 af
Outflow	=	56.26 cfs @	12.25 hrs,	Volume=	13.709 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 7.6 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.06'
Capacity at bank full= 56.21 cfs
30.0" Diameter Pipe n= 0.021 Length= 213.0' Slope= 0.0490 '/'

Reach 13R:

Inflow	=	75.86 cfs @	12.21 hrs,	Volume=	9.819 af
Outflow	=	29.35 cfs @	12.01 hrs,	Volume=	9.784 af, Atten= 61%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.3 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 6.4 fps, Avg. Travel Time= 3.1 min

Peak Depth= 2.00'
Capacity at bank full= 28.43 cfs
24.0" Diameter Pipe n= 0.021 Length= 1,205.0' Slope= 0.0412 '/'

Reach 14R:

Inflow	=	23.27 cfs @	12.22 hrs,	Volume=	4.615 af
Outflow	=	18.04 cfs @	12.20 hrs,	Volume=	4.602 af, Atten= 22%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 6.8 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.50'
Capacity at bank full= 18.04 cfs
18.0" Diameter Pipe n= 0.021 Length= 703.0' Slope= 0.0770 '/'

Reach 15R:

Inflow	=	39.79 cfs @	12.20 hrs, Volume=	6.984 af	
Outflow	=	27.71 cfs @	12.10 hrs, Volume=	6.984 af,	Atten= 30%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 5.7 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	29.07 cfs @	12.18 hrs, Volume=	4.203 af	
Outflow	=	22.82 cfs @	12.15 hrs, Volume=	4.200 af,	Atten= 21%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.2 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.4 fps, Avg. Travel Time= 1.5 min

Peak Depth= 2.00'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	30.92 cfs @	12.06 hrs, Volume=	2.041 af	
Outflow	=	4.13 cfs @	11.70 hrs, Volume=	2.038 af,	Atten= 87%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 4.1 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.00'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 18R:

Inflow = 28.55 cfs @ 12.43 hrs, Volume= 2.912 af
Outflow = 3.87 cfs @ 11.92 hrs, Volume= 2.792 af, Atten= 86%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.4 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.2 fps, Avg. Travel Time= 0.8 min

Peak Depth= 1.00'
Capacity at bank full= 3.76 cfs
12.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0290 '/'

Reach 19R:

Inflow = 31.78 cfs @ 12.24 hrs, Volume= 2.937 af
Outflow = 28.55 cfs @ 12.43 hrs, Volume= 2.912 af, Atten= 10%, Lag= 11.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.1 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 14.3 min

Peak Depth= 0.86'
Capacity at bank full= 234.10 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 1,250.0' Slope= 0.0194 '/'
Side Slope Z-value= 10.0 '/'

Reach 21R:

Inflow = 30.40 cfs @ 12.25 hrs, Volume= 2.924 af
Outflow = 4.93 cfs @ 11.85 hrs, Volume= 2.920 af, Atten= 84%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.2 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 2.1 min

Peak Depth= 1.00'
Capacity at bank full= 4.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow = 42.18 cfs @ 12.15 hrs, Volume= 3.455 af
Outflow = 9.17 cfs @ 11.85 hrs, Volume= 3.451 af, Atten= 78%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.7 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.50'
Capacity at bank full= 9.17 cfs
18.0" Diameter Pipe n= 0.021 Length= 396.0' Slope= 0.0199 '/'

Reach 23R:

Inflow	=	19.17 cfs @	12.23 hrs, Volume=	1.851 af	
Outflow	=	6.03 cfs @	14.23 hrs, Volume=	1.849 af,	Atten= 69%, Lag= 120.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 24R:

Inflow	=	23.97 cfs @	12.14 hrs, Volume=	3.343 af	
Outflow	=	3.68 cfs @	11.40 hrs, Volume=	2.999 af,	Atten= 85%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.0 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 25R:

Inflow	=	12.66 cfs @	11.85 hrs, Volume=	6.450 af	
Outflow	=	12.57 cfs @	11.89 hrs, Volume=	6.435 af,	Atten= 1%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.2 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 1.6 min

Peak Depth= 2.00'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 26R:

Inflow	=	68.62 cfs @	12.13 hrs, Volume=	16.555 af	
Outflow	=	19.40 cfs @	11.58 hrs, Volume=	15.329 af,	Atten= 72%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 3.3 fps, Avg. Travel Time= 2.8 min

Peak Depth= 2.50'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 27R:

Inflow	=	45.78 cfs @	12.18 hrs, Volume=	6.579 af	
Outflow	=	11.93 cfs @	11.80 hrs, Volume=	6.573 af,	Atten= 74%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 1.6 min

Peak Depth= 1.25'
Capacity at bank full= 11.86 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
15.0" Diameter Pipe n= 0.021 Length= 360.0' Slope= 0.0220 '/'

Reach 28R:

Inflow	=	36.21 cfs @	12.18 hrs, Volume=	16.862 af	
Outflow	=	30.87 cfs @	12.68 hrs, Volume=	16.611 af,	Atten= 15%, Lag= 30.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 3.6 fps, Avg. Travel Time= 6.1 min

Peak Depth= 3.00'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach 29R:

Inflow	=	272.83 cfs @	12.39 hrs, Volume=	54.462 af	
Outflow	=	272.70 cfs @	12.40 hrs, Volume=	54.438 af,	Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.7 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 9.9 fps, Avg. Travel Time= 0.4 min

Peak Depth= 3.66'
Capacity at bank full= 308.26 cfs
60.0" Diameter Pipe n= 0.013 Length= 212.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	55.54 cfs @	12.23 hrs, Volume=	9.280 af	
Outflow	=	28.50 cfs @	12.02 hrs, Volume=	9.262 af,	Atten= 49%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 3.4 min

Peak Depth= 2.00'
Capacity at bank full= 28.01 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.021 Length= 628.0' Slope= 0.0100 '/'

Reach 31R:

Inflow	=	25.16 cfs @	12.24 hrs, Volume=	5.330 af	
Outflow	=	15.36 cfs @	11.99 hrs, Volume=	5.321 af,	Atten= 39%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.5 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 5.8 fps, Avg. Travel Time= 2.9 min

Peak Depth= 1.50'
Capacity at bank full= 14.69 cfs
18.0" Diameter Pipe n= 0.021 Length= 1,009.0' Slope= 0.0510 '/'

Reach 32R:

Inflow	=	47.54 cfs @	12.05 hrs, Volume=	2.947 af	
Outflow	=	5.93 cfs @	11.70 hrs, Volume=	2.946 af,	Atten= 88%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.5 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 6.0 fps, Avg. Travel Time= 0.8 min

Peak Depth= 1.00'
Capacity at bank full= 5.93 cfs
12.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0723 '/'

Reach 33R:

Inflow	=	19.24 cfs @	12.12 hrs, Volume=	1.392 af	
Outflow	=	8.90 cfs @	12.05 hrs, Volume=	1.391 af,	Atten= 54%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.7 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.7 fps, Avg. Travel Time= 0.8 min

Peak Depth= 1.00'
Capacity at bank full= 8.90 cfs
12.0" Diameter Pipe n= 0.021 Length= 325.0' Slope= 0.1630 '/'

Reach 34R:

Inflow	=	14.05 cfs @	12.17 hrs,	Volume=	1.185 af
Outflow	=	5.07 cfs @	12.00 hrs,	Volume=	1.183 af, Atten= 64%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.2 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 3.7 min

Peak Depth= 1.50'
Capacity at bank full= 5.03 cfs
18.0" Diameter Pipe n= 0.021 Length= 392.0' Slope= 0.0060 '/'

Reach 35R:

Inflow	=	277.74 cfs @	12.40 hrs,	Volume=	55.620 af
Outflow	=	277.43 cfs @	12.41 hrs,	Volume=	55.573 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 9.9 fps, Avg. Travel Time= 0.8 min

Peak Depth= 3.71'
Capacity at bank full= 308.11 cfs
60.0" Diameter Pipe n= 0.013 Length= 473.0' Slope= 0.0140 '/'

Reach 36R:

Inflow	=	277.43 cfs @	12.41 hrs,	Volume=	55.573 af
Outflow	=	277.13 cfs @	12.42 hrs,	Volume=	55.536 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 9.9 fps, Avg. Travel Time= 0.6 min

Peak Depth= 3.71'
Capacity at bank full= 308.22 cfs
60.0" Diameter Pipe n= 0.013 Length= 377.0' Slope= 0.0140 '/'

Reach 37R:

Inflow	=	151.45 cfs @	12.26 hrs,	Volume=	14.861 af
Outflow	=	151.36 cfs @	12.26 hrs,	Volume=	14.860 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 19.5 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 8.4 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.63'
Capacity at bank full= 165.55 cfs
42.0" Diameter Pipe n= 0.013 Length= 65.0' Slope= 0.0271 '/'

Reach 38R: SWALE

Inflow	=	71.39 cfs @	12.25 hrs, Volume=	7.149 af	
Outflow	=	70.88 cfs @	12.29 hrs, Volume=	7.137 af,	Atten= 1%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.3 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 4.1 fps, Avg. Travel Time= 2.8 min

Peak Depth= 1.00'
Capacity at bank full= 301.56 cfs
4.00' x 2.00' deep channel, n= 0.040 Length= 690.0' Slope= 0.1290 '/'
Side Slope Z-value= 3.0 '/'

Reach 39R:

Inflow	=	71.49 cfs @	12.24 hrs, Volume=	7.151 af	
Outflow	=	71.39 cfs @	12.25 hrs, Volume=	7.149 af,	Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.5 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 7.2 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.77'
Capacity at bank full= 109.70 cfs
36.0" Diameter Pipe n= 0.021 Length= 255.0' Slope= 0.0706 '/'

Reach 40R: CHANNEL

Inflow	=	576.25 cfs @	12.38 hrs, Volume=	94.729 af	
Outflow	=	573.04 cfs @	12.43 hrs, Volume=	94.450 af,	Atten= 1%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.6 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 3.6 min

Peak Depth= 4.12'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 151.36 cfs @ 12.26 hrs, Volume= 14.860 af
Outflow = 148.38 cfs @ 12.34 hrs, Volume= 14.805 af, Atten= 2%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.6 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 6.7 min

Peak Depth= 2.14'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 130.09 cfs @ 12.42 hrs, Volume= 19.688 af
Outflow = 129.63 cfs @ 12.46 hrs, Volume= 19.660 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 2.7 min

Peak Depth= 1.51'
Capacity at bank full= 237.55 cfs
8.00' x 2.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 130.15 cfs @ 12.42 hrs, Volume= 19.691 af
Outflow = 130.09 cfs @ 12.42 hrs, Volume= 19.688 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 29.8 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 13.4 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.62'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 34.38 cfs @ 12.05 hrs, Volume= 7.688 af
Outflow = 34.39 cfs @ 12.10 hrs, Volume= 7.677 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 2.4 min

Peak Depth= 2.32'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	43.30 cfs @	12.58 hrs,	Volume=	7.690 af
Outflow	=	34.38 cfs @	12.05 hrs,	Volume=	7.688 af, Atten= 21%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.9 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.4 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.50'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	64.95 cfs @	12.11 hrs,	Volume=	7.694 af
Outflow	=	43.30 cfs @	12.58 hrs,	Volume=	7.690 af, Atten= 33%, Lag= 28.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.6 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 6.2 fps, Avg. Travel Time= 1.0 min

Peak Depth= 2.25'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Inflow	=	37.97 cfs @	12.31 hrs,	Volume=	3.996 af
Outflow	=	14.09 cfs @	14.00 hrs,	Volume=	3.994 af, Atten= 63%, Lag= 101.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 1.1 min

Peak Depth= 2.00'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 118R:

Inflow	=	27.92 cfs @	12.28 hrs,	Volume=	2.786 af
Outflow	=	17.16 cfs @	12.20 hrs,	Volume=	2.784 af, Atten= 39%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.7 fps, Avg. Travel Time= 1.2 min

Peak Depth= 1.50'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119R:

Inflow	=	35.22 cfs @	12.33 hrs,	Volume=	3.935 af
Outflow	=	27.80 cfs @	12.25 hrs,	Volume=	3.931 af, Atten= 21%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 1.6 min

Peak Depth= 2.00'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 122R:

Inflow	=	37.63 cfs @	12.15 hrs,	Volume=	2.953 af
Outflow	=	31.96 cfs @	12.34 hrs,	Volume=	2.920 af, Atten= 15%, Lag= 11.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 6.8 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 19.1 min

Peak Depth= 0.67'
Capacity at bank full= 263.47 cfs
10.00' x 2.00' deep channel, n= 0.040 Length= 1,462.0' Slope= 0.0218 '/'
Side Slope Z-value= 5.0 '/'

Reach 200R:

Inflow	=	54.33 cfs @	12.23 hrs,	Volume=	5.072 af
Outflow	=	53.25 cfs @	12.30 hrs,	Volume=	5.059 af, Atten= 2%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 4.9 min

Peak Depth= 1.56'
Capacity at bank full= 95.83 cfs
2.00' x 2.00' deep channel, n= 0.040 Length= 650.0' Slope= 0.0231 '/'
Side Slope Z-value= 3.0 '/'

Reach 280R:

Inflow	=	73.43 cfs @	12.41 hrs,	Volume=	8.508 af
Outflow	=	71.15 cfs @	12.56 hrs,	Volume=	8.444 af, Atten= 3%, Lag= 9.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.2 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 12.3 min

Peak Depth= 1.33'
Capacity at bank full= 711.78 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 985.0' Slope= 0.0081 '/'
Side Slope Z-value= 5.0 '/'

Reach DP#1: (new node)

Inflow	=	718.29 cfs @	12.48 hrs,	Volume=	118.592 af
Outflow	=	718.29 cfs @	12.48 hrs,	Volume=	118.592 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow	=	153.43 cfs @	12.48 hrs,	Volume=	18.674 af
Outflow	=	153.43 cfs @	12.48 hrs,	Volume=	18.674 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow	=	608.66 cfs @	12.42 hrs,	Volume=	102.349 af
Outflow	=	593.31 cfs @	12.49 hrs,	Volume=	102.010 af, Atten= 3%, Lag= 4.5 min
Primary	=	593.31 cfs @	12.49 hrs,	Volume=	102.010 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 393.34' Storage= 159,457 cf
Plug-Flow detention time= 4.9 min calculated for 102.010 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

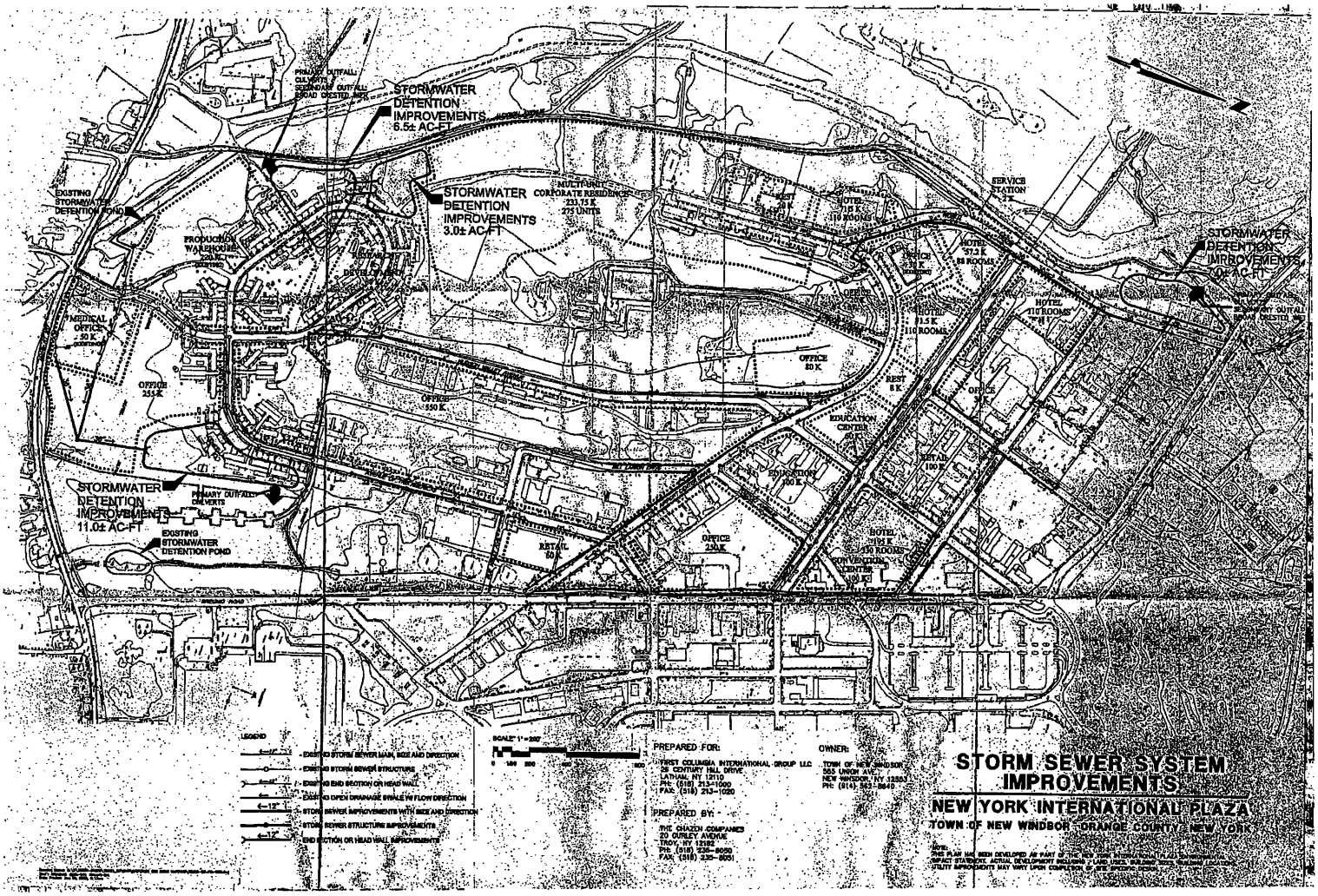
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Culvert
- 4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

Appendix D:
Proposed Drainage Conditions

Storm Sewer Improvement Plan


STORMWATER DETENTION IMPROVEMENTS 6.5± AC-FT
STORMWATER DETENTION IMPROVEMENTS 3.0± AC-FT
STORMWATER DETENTION IMPROVEMENTS 11.0± AC-FT
STORMWATER DETENTION IMPROVEMENTS 7.0± AC-FT
EXISTING STORMWATER DETENTION POND
PRIMARY OUTFALL CULVERTS
MULTI-UNIT CORPORATE RESIDENCE 233.75 K 275 UNITS
PRODUCTION WAREHOUSE
MEDICAL OFFICE 50 K
OFFICE 255 K
OFFICE 550 K
OFFICE 80 K
OFFICE 250 K
EDUCATION CENTER
HOTEL 110 ROOMS
HOTEL 57.2 K 88 ROOMS
HOTEL 110 ROOMS
SERVICE STATION
RETAIL 100 K
RETAIL 60 K
CONVENTION CENTER
LEGEND
EXISTING STORM SEWER MAIN, SIZE AND DIRECTION
EXISTING STORM SEWER STRUCTURE
EXISTING END SECTION OR HEAD WALL
EXISTING OPEN DRAINAGE SWALE W/ FLOW DIRECTION
STORM SEWER IMPROVEMENTS WITH SIZE AND DIRECTION
STORM SEWER STRUCTURE IMPROVEMENTS
END SECTION OR HEAD WALL IMPROVEMENTS
SCALE 1" = 200'
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555 UNION AVE.
NEW WINDSOR, NY 12553
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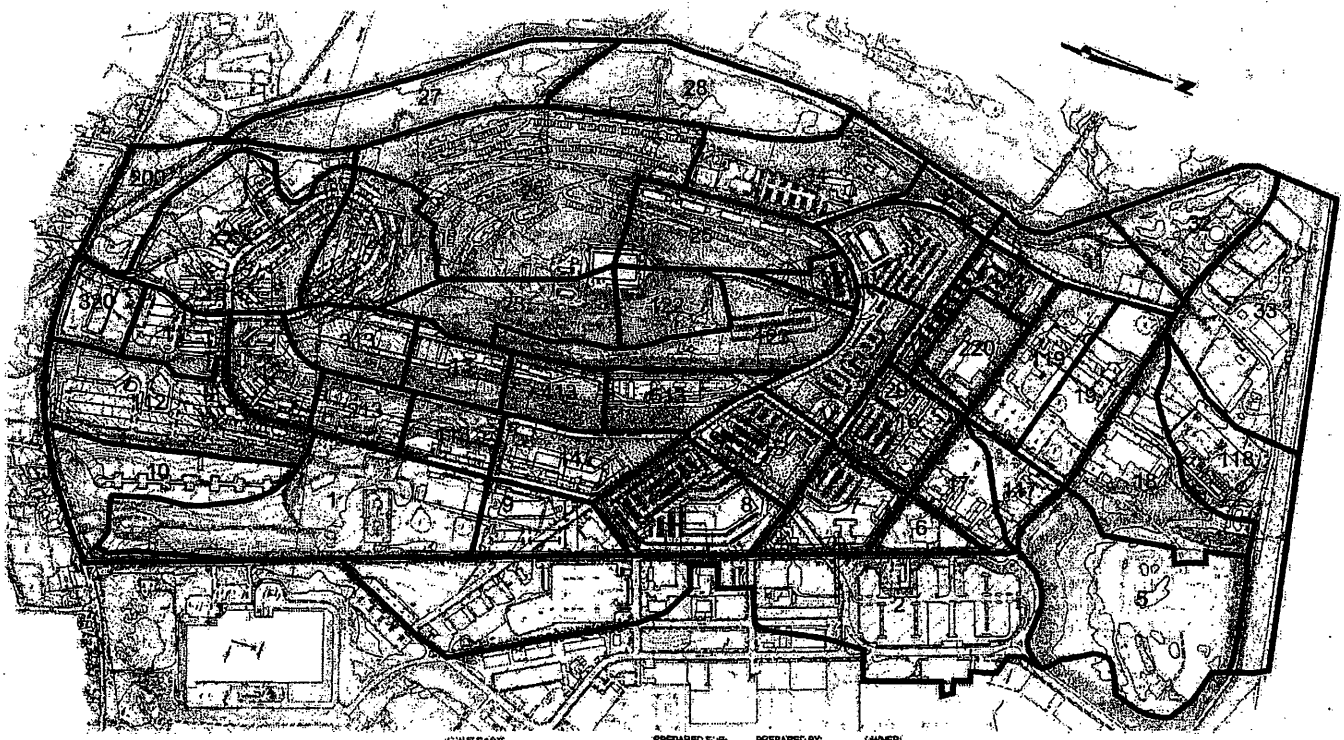
STORM SEWER SYSTEM IMPROVEMENTS
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR ORANGE COUNTY NEW YORK

Proposed Watershed Mapping



PREPARED FOR:

FIRST COLUMBIA

PREPARED BY:

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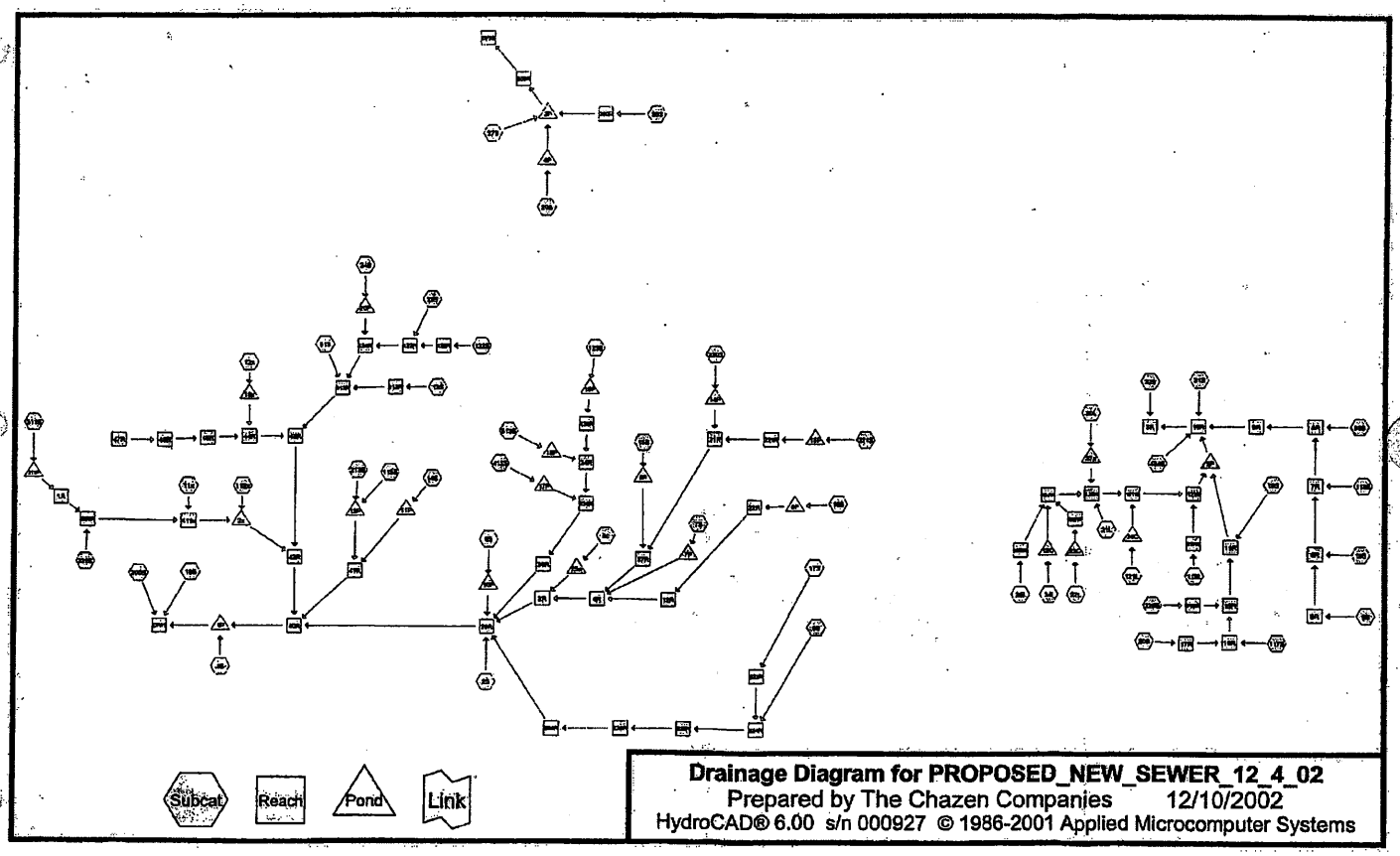
DEVELOPED CONDITIONS WATERSHED PLAN

NEW YORK INTERNATIONAL PLAZA

TOWN OF NEW WINDSOR ORANGE COUNTY NEW YORK

Proposed HydroCAD Model Results



Drainage Diagram for PROPOSED_NEW_SEWER_12_4_02
Prepared by The Chazen Companies 12/10/2002
HydroCAD® 6.00 s/n 000927 © 1986-2001 Applied Microcomputer Systems

2-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.50"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=29.2 min CN=81 Area=22.450 ac Runoff= 25.56 cfs 2.940 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 69.53 cfs 8.695 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 14.55 cfs 2.167 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 6.63 cfs 0.512 af

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE
Tc=14.5 min CN=91 Area=7.390 ac Runoff= 16.49 cfs 1.472 af

Subcatchment 8c: CONVENTION CENTER
Tc=8.2 min CN=93 Area=11.270 ac Runoff= 31.89 cfs 2.426 af

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING
Tc=7.4 min CN=93 Area=6.740 ac Runoff= 19.59 cfs 1.451 af

Subcatchment 10S: area near trailer road
Tc=50.3 min CN=80 Area=11.560 ac Runoff= 9.58 cfs 1.435 af

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE
Tc=3.4 min CN=92 Area=5.000 ac Runoff= 16.10 cfs 1.038 af

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI
Tc=8.0 min CN=86 Area=6.770 ac Runoff= 15.33 cfs 1.107 af

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD
Tc=7.1 min CN=90 Area=5.010 ac Runoff= 13.46 cfs 0.962 af

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS
Tc=14.0 min CN=86 Area=7.960 ac Runoff= 15.10 cfs 1.299 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)
Tc=7.2 min CN=93 Area=7.350 ac Runoff= 21.50 cfs 1.583 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL
Tc=7.6 min CN=94 Area=7.230 ac Runoff= 21.42 cfs 1.614 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 6.25 cfs 0.580 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 17.22 cfs 1.667 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 9.54 cfs 1.339 af

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD
Tc=5.9 min CN=88 Area=0.700 ac Runoff= 1.82 cfs 0.124 af

Subcatchment 21L: AREA NEAR SERVICE STATION
Tc=3.8 min CN=84 Area=2.680 ac Runoff= 6.44 cfs 0.404 af

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE
Tc=12.1 min CN=87 Area=2.110 ac Runoff= 4.39 cfs 0.359 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=9.860 ac Runoff= 9.63 cfs 0.837 af

Subcatchment 24S: RESEARCH AND DEVELOPMENT
Tc=21.8 min CN=86 Area=10.130 ac Runoff= 16.16 cfs 1.649 af

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES
Tc=39.9 min CN=81 Area=10.650 ac Runoff= 10.46 cfs 1.389 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=84.9 min CN=72 Area=13.750 ac Runoff= 5.30 cfs 1.126 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=85.7 min CN=73 Area=13.620 ac Runoff= 5.56 cfs 1.177 af

Subcatchment 29S: CORPORATE RESIDENCE
Tc=59.6 min CN=86 Area=30.270 ac Runoff= 29.44 cfs 4.863 af

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL
Tc=7.1 min CN=88 Area=7.990 ac Runoff= 20.07 cfs 1.417 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 9.03 cfs 0.900 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 6.86 cfs 0.905 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 29.83 cfs 3.434 af

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=21.0 min CN=98 Area=3.960 ac Runoff= 9.00 cfs 1.005 af

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND
Tc=20.3 min CN=90 Area=15.060 ac Runoff= 28.60 cfs 2.880 af

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS
Tc=6.3 min CN=92 Area=4.740 ac Runoff= 13.82 cfs 0.983 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 7.72 cfs 0.649 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 19.03 cfs 1.660 af

Subcatchment 119L:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 11.77 cfs 1.260 af

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL
Tc=4.9 min CN=90 Area=4.030 ac Runoff= 11.50 cfs 0.774 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=15.4 min CN=72 Area=5.920 ac Runoff= 5.42 cfs 0.502 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=12.4 min CN=80 Area=12.310 ac Runoff= 18.79 cfs 1.551 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=75 Area=9.240 ac Runoff= 6.84 cfs 0.907 af

Subcatchment 213S: OFFICE ON AVENUE OF AMERICAS
Tc=5.8 min CN=91 Area=4.560 ac Runoff= 13.06 cfs 0.911 af

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET
Tc=15.2 min CN=80 Area=5.160 ac Runoff= 7.37 cfs 0.649 af

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL
Tc=3.4 min CN=94 Area=1.450 ac Runoff= 4.92 cfs 0.324 af

Subcatchment 230S: EDUCATION AND HOTELS AND REST
Tc=5.4 min CN=87 Area=7.290 ac Runoff= 18.43 cfs 1.243 af

Subcatchment 311S: LSI
Tc=22.3 min CN=89 Area=18.110 ac Runoff= 31.96 cfs 3.327 af

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD
Tc=7.4 min CN=88 Area=6.270 ac Runoff= 15.60 cfs 1.112 af

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE
Tc=3.5 min CN=91 Area=4.640 ac Runoff= 14.47 cfs 0.927 af

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD
Tc=6.2 min CN=89 Area=4.950 ac Runoff= 13.19 cfs 0.914 af

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=33.0 min CN=72 Area=7.950 ac Runoff= 5.32 cfs 0.669 af

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE
Tc=7.7 min CN=88 Area=6.220 ac Runoff= 15.32 cfs 1.103 af

Reach 1R: (new node) Inflow= 24.20 cfs 3.212 af
Length= 416.0' Max Vel= 10.0 fps Capacity= 80.79 cfs Outflow= 24.16 cfs 3.210 af

Reach 2R: (new node) Inflow= 41.15 cfs 7.903 af
Length= 670.0' Max Vel= 11.2 fps Capacity= 118.90 cfs Outflow= 41.08 cfs 7.892 af

Reach 3R: DP3 Inflow= 99.28 cfs 18.974 af
Length= 50.0' Max Vel= 4.9 fps Capacity= 1,521.75 cfs Outflow= 99.25 cfs 18.968 af

Reach 4R: (new node) Inflow= 30.51 cfs 5.704 af
Length= 641.0' Max Vel= 8.0 fps Capacity= 84.14 cfs Outflow= 30.44 cfs 5.693 af

Reach 5R: Inflow= 14.55 cfs 2.167 af
Length= 570.0' Max Vel= 7.0 fps Capacity= 60.37 cfs Outflow= 14.51 cfs 2.162 af

Reach 6R: Inflow= 23.28 cfs 3.829 af
Length= 350.0' Max Vel= 1.9 fps Capacity= 148.76 cfs Outflow= 23.24 cfs 3.812 af

Reach 7R: Inflow= 36.01 cfs 5.472 af
Length= 220.0' Max Vel= 3.6 fps Capacity= 504.53 cfs Outflow= 35.92 cfs 5.464 af

Reach 8R: Inflow= 65.65 cfs 8.898 af
Length= 45.0' Max Vel= 10.3 fps Capacity= 217.33 cfs Outflow= 65.64 cfs 8.897 af

Reach 9R: Inflow= 65.64 cfs 8.897 af
Length= 290.0' Max Vel= 3.5 fps Capacity= 278.93 cfs Outflow= 65.29 cfs 8.880 af

Reach 10R: Inflow= 92.70 cfs 18.106 af
Length= 280.0' Max Vel= 3.8 fps Capacity= 316.14 cfs Outflow= 92.45 cfs 18.069 af

Reach 11R: Inflow= 20.88 cfs 2.759 af
Length= 670.0' Max Vel= 8.2 fps Capacity= 55.41 cfs Outflow= 20.67 cfs 2.754 af

Reach 12R: (new node) Inflow= 8.04 cfs 1.486 af
Length= 612.0' Max Vel= 5.1 fps Capacity= 16.00 cfs Outflow= 8.02 cfs 1.482 af

Reach 12W: Inflow= 37.72 cfs 6.258 af
Length= 213.0' Max Vel= 17.5 fps Capacity= 147.66 cfs Outflow= 37.70 cfs 6.256 af

Reach 15R: Inflow= 16.30 cfs 1.420 af
Length= 22.0' Max Vel= 9.2 fps Capacity= 27.71 cfs Outflow= 16.28 cfs 1.420 af

Reach 16R: Inflow= 9.31 cfs 0.773 af
Length= 390.0' Max Vel= 6.8 fps Capacity= 22.62 cfs Outflow= 9.12 cfs 0.771 af

Reach 17R: Inflow= 1.82 cfs 0.124 af
Length= 465.0' Max Vel= 5.1 fps Capacity= 4.13 cfs Outflow= 1.70 cfs 0.124 af

Reach 21R: Inflow= 7.75 cfs 1.428 af
Length= 640.0' Max Vel= 11.9 fps Capacity= 23.49 cfs Outflow= 7.74 cfs 1.426 af

Reach 22R: Inflow= 8.05 cfs 1.487 af
Length= 396.0' Max Vel= 8.5 fps Capacity= 31.99 cfs Outflow= 8.04 cfs 1.486 af

Reach 27R: Inflow= 15.62 cfs 2.881 af
Length= 360.0' Max Vel= 10.5 fps Capacity= 33.55 cfs Outflow= 15.60 cfs 2.878 af

Reach 29R: Inflow= 142.14 cfs 22.331 af
Length= 1,062.0' Max Vel= 15.4 fps Capacity= 308.18 cfs Outflow= 141.62 cfs 22.296 af

Reach 30R: Inflow= 21.12 cfs 3.326 af
Length= 333.0' Max Vel= 10.8 fps Capacity= 94.33 cfs Outflow= 21.10 cfs 3.324 af

Reach 34R: Inflow= 14.98 cfs 2.459 af
Length= 500.0' Max Vel= 14.5 fps Capacity= 53.05 cfs Outflow= 14.96 cfs 2.457 af

Reach 40R: CHANNEL Inflow= 194.87 cfs 35.928 af
Length= 820.0' Max Vel= 5.8 fps Capacity= 539.62 cfs Outflow= 194.06 cfs 35.798 af

Reach 41R: SWALE Inflow= 17.60 cfs 2.975 af
Length= 890.0' Max Vel= 3.0 fps Capacity= 570.88 cfs Outflow= 17.38 cfs 2.952 af

Reach 42R: SWALE Inflow= 42.21 cfs 10.712 af
Length= 350.0' Max Vel= 3.6 fps Capacity= 1,142.31 cfs Outflow= 41.57 cfs 10.680 af

Reach 43R: Inflow= 41.52 cfs 5.970 af
Length= 255.0' Max Vel= 21.7 fps Capacity= 296.25 cfs Outflow= 41.44 cfs 5.969 af

Reach 44R: Inflow= 8.58 cfs 1.059 af
Length= 467.0' Max Vel= 4.2 fps Capacity= 36.45 cfs Outflow= 8.52 cfs 1.056 af

Reach 45R: Inflow= 0.00 cfs 0.000 af
Length= 126.0' Max Vel= 0.0 fps Capacity= 34.38 cfs Outflow= 0.00 cfs 0.000 af

Reach 46R: Inflow= 0.00 cfs 0.000 af
Length= 377.0' Max Vel= 0.0 fps Capacity= 40.58 cfs Outflow= 0.00 cfs 0.000 af

Reach 47R:
Length= 200.0' Max Vel= 0.0 fps Capacity= 14.00 cfs Outflow= 0.00 cfs 0.000 af

Reach 111x: (new node) Inflow= 35.77 cfs 5.171 af
Length= 1,426.0' Max Vel= 12.3 fps Capacity= 94.33 cfs Outflow= 33.31 cfs 5.158 af

Reach 113R: (new node) Inflow= 13.46 cfs 0.962 af
Length= 416.0' Max Vel= 12.5 fps Capacity= 45.24 cfs Outflow= 13.08 cfs 0.961 af

Reach 118R: Inflow= 7.37 cfs 0.649 af
Length= 400.0' Max Vel= 9.3 fps Capacity= 17.16 cfs Outflow= 7.25 cfs 0.649 af

Reach 119W: Inflow= 11.77 cfs 1.260 af
Length= 461.0' Max Vel= 8.5 fps Capacity= 27.72 cfs Outflow= 11.71 cfs 1.259 af

Reach 121W: (new node) Inflow= 27.12 cfs 5.001 af
Length= 312.0' Max Vel= 16.9 fps Capacity= 160.20 cfs Outflow= 27.10 cfs 4.999 af

Reach 122R: Inflow= 5.42 cfs 0.502 af
Length= 1,462.0' Max Vel= 1.8 fps Capacity= 263.47 cfs Outflow= 4.19 cfs 0.488 af

Reach 123R: (new node) Inflow= 10.13 cfs 1.324 af
Length= 500.0' Max Vel= 9.6 fps Capacity= 64.85 cfs Outflow= 9.93 cfs 1.322 af

Reach 124R: (new node) Inflow= 16.75 cfs 2.847 af
Length= 380.0' Max Vel= 7.9 fps Capacity= 66.70 cfs Outflow= 16.70 cfs 2.843 af

Reach 130W: (new node) Inflow= 23.01 cfs 4.272 af
Length= 511.0' Max Vel= 12.9 fps Capacity= 117.99 cfs Outflow= 23.00 cfs 4.268 af

Reach 134W: (new node) Inflow= 15.53 cfs 2.578 af
Length= 1,000.0' Max Vel= 14.6 fps Capacity= 52.57 cfs Outflow= 15.49 cfs 2.573 af

Reach 136R: (new node) Inflow= 7.90 cfs 1.424 af
Length= 616.0' Max Vel= 12.1 fps Capacity= 53.05 cfs Outflow= 7.88 cfs 1.422 af

Reach 221R: (new node) Inflow= 1.42 cfs 0.292 af
Length= 520.0' Max Vel= 9.4 fps Capacity= 10.60 cfs Outflow= 1.41 cfs 0.292 af

Reach 222W: (new node) Inflow= 0.78 cfs 0.274 af
Length= 900.0' Max Vel= 6.6 fps Capacity= 15.56 cfs Outflow= 0.78 cfs 0.273 af

Reach 225W: (new node) Inflow= 10.46 cfs 1.389 af
Length= 85.0' Max Vel= 9.1 fps Capacity= 31.99 cfs Outflow= 10.46 cfs 1.389 af

Reach 280R: Inflow= 12.84 cfs 4.474 af
Length= 200.0' Max Vel= 1.6 fps Capacity= 559.18 cfs Outflow= 12.84 cfs 4.446 af

Reach 313R: (new node) Inflow= 36.15 cfs 4.916 af
Length= 350.0' Max Vel= 18.0 fps Capacity= 156.42 cfs Outflow= 36.03 cfs 4.914 af

Reach 320R: (new node) Inflow= 26.86 cfs 4.137 af
Length= 503.0' Max Vel= 11.5 fps Capacity= 94.33 cfs Outflow= 26.77 cfs 4.133 af

Reach 334R: (new node) Inflow= 21.15 cfs 3.329 af
Length= 500.0' Max Vel= 15.9 fps Capacity= 53.05 cfs Outflow= 21.12 cfs 3.326 af

Reach 380R: Inflow= 5.56 cfs 1.177 af
Length= 1,090.0' Max Vel= 1.2 fps Capacity= 559.18 cfs Outflow= 5.33 cfs 1.143 af

Reach 523R: Inflow= 6.25 cfs 0.580 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 5.72 cfs 0.579 af

Reach 524R: Inflow= 11.31 cfs 1.091 af
Length= 80.0' Max Vel= 5.0 fps Capacity= 3.49 cfs Outflow= 3.69 cfs 1.091 af

Reach 525R: Inflow= 3.69 cfs 1.091 af
Length= 300.0' Max Vel= 3.3 fps Capacity= 11.72 cfs Outflow= 3.54 cfs 1.089 af

Reach 526R: Inflow= 3.54 cfs 1.089 af
Length= 550.0' Max Vel= 2.9 fps Capacity= 18.31 cfs Outflow= 3.50 cfs 1.085 af

Reach 528R: Inflow= 3.50 cfs 1.085 af
Length= 1,330.0' Max Vel= 2.8 fps Capacity= 29.20 cfs Outflow= 3.49 cfs 1.076 af

Reach DP#1: (new node) Inflow= 230.03 cfs 40.896 af
Outflow= 230.03 cfs 40.896 af

Reach DP#2: DESIGN POINT #2 Inflow= 12.84 cfs 4.446 af
Outflow= 12.84 cfs 4.446 af

Pond 1P: EXISTING POND Peak Storage= 51,771 cf Inflow= 217.06 cfs 38.739 af
Primary= 213.99 cfs 38.554 af Outflow= 213.99 cfs 38.554 af

Pond 2x: (new node) Peak Storage= 202,737 cf Inflow= 56.00 cfs 8.039 af
Primary= 13.44 cfs 4.743 af Outflow= 13.44 cfs 4.743 af

Pond 3P: Peak Storage= 3.056 af Inflow= 32.25 cfs 6.530 af
Primary= 12.84 cfs 4.474 af Outflow= 12.84 cfs 4.474 af

Pond 4P: (new node) Peak Storage= 59,332 cf Inflow= 29.44 cfs 4.863 af
Primary= 23.46 cfs 4.261 af Outflow= 23.46 cfs 4.261 af

Pond 5P: det pond Peak Storage= 139,558 cf Inflow= 56.74 cfs 9.010 af
Primary= 30.34 cfs 7.658 af Outflow= 30.34 cfs 7.658 af

Pond 7P: P-LOT DET. POND	Peak Storage= 24,874 cf	Inflow= 16.49 cfs	1.472 af	
	Primary= 7.07 cfs	1.344 af	Outflow= 7.07 cfs	1.344 af
Pond 8P: (new node)	Peak Storage= 26,861 cf	Inflow= 21.42 cfs	1.614 af	
	Primary= 8.05 cfs	1.487 af	Outflow= 8.05 cfs	1.487 af
Pond 9P: (new node)	Peak Storage= 26,579 cf	Inflow= 21.50 cfs	1.583 af	
	Primary= 7.89 cfs	1.455 af	Outflow= 7.89 cfs	1.455 af
Pond 10P: P-LOT SUBSURFACE DET. POND	Peak Storage= 23,273 cf	Inflow= 19.59 cfs	1.451 af	
	Primary= 7.69 cfs	1.344 af	Outflow= 7.69 cfs	1.344 af
Pond 11P: P-LOT SUBSURFACE DET. POND	Peak Storage= 19,479 cf	Inflow= 15.10 cfs	1.299 af	
	Primary= 7.28 cfs	1.203 af	Outflow= 7.28 cfs	1.203 af
Pond 12C: P-LOT SUBSURFACE POND	Peak Storage= 16,704 cf	Inflow= 9.00 cfs	1.005 af	
	Primary= 4.38 cfs	0.916 af	Outflow= 4.38 cfs	0.916 af
Pond 13P: SHARED P-LOT SUBSURFACE DET. POND	Peak Storage= 28,713 cf	Inflow= 26.87 cfs	1.894 af	
	Primary= 10.69 cfs	1.772 af	Outflow= 10.69 cfs	1.772 af
Pond 14P: P-LOT SUBSURFACE DET.POND	Peak Storage= 20,700 cf	Inflow= 18.43 cfs	1.243 af	
	Primary= 6.34 cfs	1.136 af	Outflow= 6.34 cfs	1.136 af
Pond 15P: SUB-SURFACE POND	Peak Storage= 13,892 cf	Inflow= 15.32 cfs	1.103 af	
	Primary= 8.13 cfs	1.038 af	Outflow= 8.13 cfs	1.038 af
Pond 16P: SUBSURFACE STORAGE POND PARKING LOT	Peak Storage= 5,963 cf	Inflow= 4.92 cfs	0.324 af	
	Primary= 1.42 cfs	0.292 af	Outflow= 1.42 cfs	0.292 af
Pond 17P:	Peak Storage= 10,904 cf	Inflow= 13.19 cfs	0.914 af	
	Primary= 6.91 cfs	0.872 af	Outflow= 6.91 cfs	0.872 af
Pond 18P:	Peak Storage= 23,650 cf	Inflow= 18.79 cfs	1.551 af	
	Primary= 7.90 cfs	1.424 af	Outflow= 7.90 cfs	1.424 af
Pond 19x: (new node)	Peak Storage= 12,448 cf	Inflow= 15.33 cfs	1.107 af	
	Primary= 8.58 cfs	1.059 af	Outflow= 8.58 cfs	1.059 af
Pond 20P: (new node)	Peak Storage= 24,676 cf	Inflow= 16.16 cfs	1.649 af	
	Primary= 8.46 cfs	1.524 af	Outflow= 8.46 cfs	1.524 af
Pond 22p: p-lot subsurface det. pond	Peak Storage= 23,716 cf	Inflow= 20.07 cfs	1.417 af	
	Primary= 7.23 cfs	1.296 af	Outflow= 7.23 cfs	1.296 af
Pond 23C: p-lot subsurface det. pond	Peak Storage= 8,253 cf	Inflow= 4.39 cfs	0.359 af	
	Primary= 0.78 cfs	0.274 af	Outflow= 0.78 cfs	0.274 af

Pond 24C: p-lot subsurface det. pond Peak Storage= 10,122 cf Inflow= 11.50 cfs 0.774 af
Primary= 5.48 cfs 0.733 af Outflow= 5.48 cfs 0.733 af

Pond 25w: SUB-SURFACE PARKING LOT POND Peak Storage= 43,288 cf Inflow= 31.89 cfs 2.426 af
Primary= 10.77 cfs 2.210 af Outflow= 10.77 cfs 2.210 af

Pond 311P: LSI POND Peak Storage= 0.659 af Inflow= 31.96 cfs 3.327 af
Primary= 24.20 cfs 3.212 af Outflow= 24.20 cfs 3.212 af

Runoff Area = 483.310 ac Volume = 74.220 af Average Depth = 1.84"

Subcatchment 1S: AREA NEAR POND

Runoff = 25.56 cfs @ 12.42 hrs, Volume= 2.940 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
9.810	77	Woods, Good, HSG D
2.940	98	Paved parking & roofs
9.700	80	Pasture/grassland/range, Good, HSG D
22.450	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.0150	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
13.0	670	0.0150	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	820	0.0150	7.9	570.88	**Trap/Vee/Rect Channel Flow,** Bot.W=6.00' D=4.00' Z= 3.0 '/' n= 0.040
29.2	1,640	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 69.53 cfs @ 12.45 hrs, Volume= 8.695 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 14.55 cfs @ 12.69 hrs, Volume= 2.167 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 6.63 cfs @ 12.14 hrs, Volume= 0.512 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE

Runoff = 16.49 cfs @ 12.20 hrs, Volume= 1.472 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
2.010	74	>75% Grass cover, Good, HSG C
5.380	98	Paved parking & roofs
7.390	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	190	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	20	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	105	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	320	0.0590	3.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.8	370	0.0216	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.0	520	0.0135	1.7		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.5	1,675	Total			

Subcatchment 8c: CONVENTION CENTER

Runoff = 31.89 cfs @ 12.11 hrs, Volume= 2.426 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
9.070	98	Paved parking & roofs
2.200	74	>75% Grass cover, Good, HSG C
11.270	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.5	50	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.6	970	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	1,170	Total			

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING

Runoff = 19.59 cfs @ 12.10 hrs, Volume= 1.451 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
5.420	98	Paved parking & roofs
1.320	74	>75% Grass cover, Good, HSG C
6.740	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	582	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	904	Total			

Subcatchment 10S: area near trailer road

Runoff = 9.58 cfs @ 12.70 hrs, Volume= 1.435 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
7.420	77	Woods, Good, HSG D
3.170	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
11.560	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.1	150	0.0159	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
9.3	353	0.0159	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.5	713	0.0112	1.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
50.3	1,781	Total			

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE

Runoff = 16.10 cfs @ 12.05 hrs, Volume= 1.038 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.650	98	Paved parking & roofs
1.350	74	Pasture/grassland/range, Good, HSG C
5.000	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.7	300	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	80	0.3300	23.4	421.71	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.00' Z= 3.0 '/' n= 0.040
3.4	530	Total			

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI

Runoff = 15.33 cfs @ 12.11 hrs, Volume= 1.107 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
2.940	74	Pasture/grassland/range, Good, HSG C
0.470	70	Woods, Good, HSG C
3.360	98	Paved parking & roofs
6.770	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0800	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.9	350	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	680	0.0210	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.0	1,180	Total			

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 13.46 cfs @ 12.10 hrs, Volume= 0.962 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.300	98	Paved parking & roofs
1.710	74	>75% Grass cover, Good, HSG C
5.010	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.9	350	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	65	0.3300	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	306	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	871	Total			

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS

Runoff = 15.10 cfs @ 12.20 hrs, Volume= 1.299 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.870	74	Pasture/grassland/range, Good, HSG C
4.090	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	150	0.0050	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.9	338	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	130	0.0462	4.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.8	585	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.0	1,203	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)

Runoff = 21.50 cfs @ 12.10 hrs, Volume= 1.583 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.500	74	Pasture/grassland/range, Good, HSG C
5.850	98	Paved parking & roofs
7.350	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	84	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	168	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	100	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	380	0.0950	4.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	88	0.0680	18.8	58.99	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
7.2	970	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL

Runoff = 21.42 cfs @ 12.11 hrs, Volume= 1.614 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.150	74	>75% Grass cover, Good, HSG C
6.080	98	Paved parking & roofs
7.230	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	115	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	35	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	115	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	0.0430	3.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	35	0.0200	8.4	14.86	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.6	947	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 6.25 cfs @ 12.24 hrs, Volume= 0.580 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 17.22 cfs @ 12.27 hrs, Volume= 1.667 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 9.54 cfs @ 12.61 hrs, Volume= 1.339 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD

Runoff = 1.82 cfs @ 12.09 hrs, Volume= 0.124 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
0.280	74	>75% Grass cover, Good, HSG C
0.420	98	Paved parking & roofs
0.700	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	150	0.1867	0.5		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.6	200	0.0833	5.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	350	Total			

Subcatchment 21L: AREA NEAR SERVICE STATION

Runoff = 6.44 cfs @ 12.06 hrs, Volume= 0.404 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.560	74	Pasture/grassland/range, Good, HSG C
1.120	98	Paved parking & roofs
2.680	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0722	2.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	127	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8	653	Total			

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE

Runoff = 4.39 cfs @ 12.17 hrs, Volume= 0.359 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
0.830	74	Pasture/grassland/range, Good, HSG C
0.130	70	Woods, Good, HSG C
1.150	98	Paved parking & roofs
2.110	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	150	0.0649	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.9	312	0.0649	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	275	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.1	737	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 9.63 cfs @ 12.20 hrs, Volume= 0.837 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
2.180	74	Pasture/grassland/range, Good, HSG C
7.310	70	Woods, Good, HSG C
0.370	98	PAVED
9.860	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: RESEARCH AND DEVELOPMENT

Runoff = 16.16 cfs @ 12.30 hrs, Volume= 1.649 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
2.550	74	Pasture/grassland/range, Good, HSG C
1.990	70	Woods, Good, HSG C
5.590	98	Paved parking & roofs
10.130	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.1116	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	242	0.1116	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	883	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.8	1,275	Total			

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES

Runoff = 10.46 cfs @ 12.56 hrs, Volume= 1.389 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.510	70	Woods, Good, HSG C
3.140	98	Paved parking & roofs
10.650	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.4	150	0.0200	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.3	500	0.0700	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	280	0.0930	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	24	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	215	0.1300	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
39.9	1,169	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 5.30 cfs @ 13.21 hrs, Volume= 1.126 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
9.790	70	Woods, Good, HSG C
0.060	87	Dirt roads, HSG C
3.520	74	Pasture/grassland/range, Good, HSG C
0.380	98	Paved parking & roofs
13.750	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	150	0.0800	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	410	0.0719	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
62.0	1,315	0.0050	0.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.5	470	0.0139	5.3	210.39	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
84.9	2,345	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 5.56 cfs @ 13.23 hrs, Volume= 1.177 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
9.040	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
0.960	98	Paved parking & roofs
13.620	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.4	150	0.0133	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
15.1	1,015	0.0500	1.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.2	358	0.0168	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.4	1,105	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.6	275	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
85.7	2,903	Total			

Subcatchment 29S: CORPORATE RESIDENCE

Runoff = 29.44 cfs @ 12.80 hrs, Volume= 4.863 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
5.940	74	Pasture/grassland/range, Good, HSG C
7.680	70	Woods, Good, HSG C
16.030	98	Paved parking & roofs
0.620	87	Dirt roads, HSG C
30.270	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.5	150	0.0100	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.5	370	0.0270	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.6	235	0.0940	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	175	0.2170	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	1,010	0.0180	2.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	680	0.0350	3.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	220	0.1640	6.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.9	200	0.0650	3.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
59.6	3,040	Total			

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL

Runoff = 20.07 cfs @ 12.10 hrs, Volume= 1.417 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.370	74	Pasture/grassland/range, Good, HSG C
4.620	98	Paved parking & roofs
7.990	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	290	0.0414	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	636	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	1,452	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 9.03 cfs @ 12.30 hrs, Volume= 0.900 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 6.86 cfs @ 12.56 hrs, Volume= 0.905 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 29.83 cfs @ 12.40 hrs, Volume= 3.434 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 9.00 cfs @ 12.27 hrs, Volume= 1.005 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.960	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.1	575	0.0133	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	533	0.0719	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.0	1,258	Total			

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND

Runoff = 28.60 cfs @ 12.27 hrs, Volume= 2.880 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
10.040	98	Paved parking & roofs
5.020	74	>75% Grass cover, Good, HSG C
15.060	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	150	0.1280	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	100	0.1280	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	1,020	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
20.3	1,270	Total			

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS

Runoff = 13.82 cfs @ 12.09 hrs, Volume= 0.983 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.520	98	Paved parking & roofs
1.220	74	Pasture/grassland/range, Good, HSG C
4.740	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.7	450	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	86	0.0233	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	686	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 7.72 cfs @ 12.19 hrs, Volume= 0.649 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 19.03 cfs @ 12.21 hrs, Volume= 1.660 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119L:

Runoff = 11.77 cfs @ 12.34 hrs, Volume= 1.260 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL

Runoff = 11.50 cfs @ 12.07 hrs, Volume= 0.774 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.350	74	>75% Grass cover, Good, HSG C
2.680	98	Paved parking & roofs
4.030	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0278	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.3	67	0.0278	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	280	0.0786	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	529	0.0340	3.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.9	1,026	Total			

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL

Runoff = 5.42 cfs @ 12.23 hrs, Volume= 0.502 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.340	74	Pasture/grassland/range, Good, HSG C
0.200	87	Dirt roads, HSG C
4.230	70	Woods, Good, HSG C
0.150	98	Paved parking & roofs
5.920	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.1456	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.5	166	0.1456	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	625	0.0100	9.5	56.73	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 4.0 '/' n= 0.011
15.4	941	Total			

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD

Runoff = 18.79 cfs @ 12.18 hrs, Volume= 1.551 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
4.710	74	Pasture/grassland/range, Good, HSG C
4.000	70	Woods, Good, HSG C
3.600	98	Paved parking & roofs
12.310	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	80	0.0750	2.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.9	70	0.0857	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.2	200	0.1600	2.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	500	0.0100	1.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.3	250	0.1600	15.8	252.16	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	450	0.0578	9.5	151.56	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
12.4	1,550	Total			

Subcatchment 200S: area along 207

Runoff = 6.84 cfs @ 12.57 hrs, Volume= 0.907 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
0.310	87	Dirt roads, HSG C
4.900	70	Woods, Good, HSG C
3.110	74	Pasture/grassland/range, Good, HSG C
0.920	98	Paved parking & roofs
9.240	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0273	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.6	326	0.0273	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	1,680	0.0214	5.8	92.22	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
1.8	650	0.0231	6.0	95.81	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
38.4	2,806	Total			

Subcatchment 213S: OFFICE ON AVENUE OF AMERICAS

Runoff = 13.06 cfs @ 12.09 hrs, Volume= 0.911 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.170	98	Paved parking & roofs
1.390	74	>75% Grass cover, Good, HSG C
4.560	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.2	390	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	88	0.0227	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.8	628	Total			

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET

Runoff = 7.37 cfs @ 12.22 hrs, Volume= 0.649 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.500	98	Paved parking & roofs
2.090	74	>75% Grass cover, Good, HSG C
1.570	70	Woods, Good, HSG C
5.160	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.1465	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.8	205	0.1465	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	190	0.0158	5.0	79.24	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
15.2	545	Total			

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL

Runoff = 4.92 cfs @ 12.05 hrs, Volume= 0.324 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.180	98	Paved parking & roofs
0.270	74	>75% Grass cover, Good, HSG C
1.450	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.3	35	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	252	0.0397	4.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	437	Total			

Subcatchment 230S: EDUCATION AND HOTELS AND REST

Runoff = 18.43 cfs @ 12.08 hrs, Volume= 1.243 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.920	98	Paved parking & roofs
3.370	74	>75% Grass cover, Good, HSG C
7.290	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.5	740	0.0568	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	446	0.0807	5.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	1,336	Total			

Subcatchment 311S: LSI

Runoff = 31.96 cfs @ 12.30 hrs, Volume= 3.327 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
11.570	98	Paved parking & roofs
6.540	74	>75% Grass cover, Good, HSG C
18.110	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	150	0.0300	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
3.4	250	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	1,180	0.0150	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.3	1,580	Total			

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD

Runoff = 15.60 cfs @ 12.11 hrs, Volume= 1.112 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.710	98	Paved parking & roofs
2.560	74	>75% Grass cover, Good, HSG C
6.270	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	136	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.8	493	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	375	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	1,154	Total			

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE

Runoff = 14.47 cfs @ 12.05 hrs, Volume= 0.927 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.190	98	Paved parking & roofs
1.450	74	>75% Grass cover, Good, HSG C
4.640	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	150	0.0400	2.1		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	550	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	700	Total			

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 13.19 cfs @ 12.09 hrs, Volume= 0.914 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
1.850	74	>75% Grass cover, Good, HSG C
3.100	98	Paved parking & roofs
4.950	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	394	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	189	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	170	0.3333	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	903	Total			

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 5.32 cfs @ 12.50 hrs, Volume= 0.669 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.220	74	Pasture/grassland/range, Good, HSG C
7.950	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.7	200	0.0200	0.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.7	700	0.2500	2.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.3	1,500	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
33.0	2,550	Total			

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE

Runoff = 15.32 cfs @ 12.11 hrs, Volume= 1.103 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.50"

Area (ac)	CN	Description
3.570	98	Paved parking & roofs
2.650	74	>75% Grass cover, Good, HSG C
6.220	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	150	0.0067	1.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	70	0.0067	1.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	510	0.0275	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	170	0.0706	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	465	0.0645	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	1,365	Total			

Reach 1R: (new node)

Inflow = 24.20 cfs @ 12.49 hrs, Volume= 3.212 af
Outflow = 24.16 cfs @ 12.51 hrs, Volume= 3.210 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 4.2 fps, Avg. Travel Time= 1.6 min

Peak Depth= 1.13'
Capacity at bank full= 80.79 cfs
36.0" Diameter Pipe n= 0.012 Length= 416.0' Slope= 0.0125 '/'

Reach 2R: (new node)

Inflow	=	41.15 cfs @	12.48 hrs,	Volume=	7.903 af
Outflow	=	41.08 cfs @	12.51 hrs,	Volume=	7.892 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.2 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 2.2 min

Peak Depth= 1.42'
Capacity at bank full= 118.90 cfs
42.0" Diameter Pipe n= 0.011 Length= 670.0' Slope= 0.0100 '/'

Reach 3R: DP3

Inflow	=	99.28 cfs @	12.54 hrs,	Volume=	18.974 af
Outflow	=	99.25 cfs @	12.54 hrs,	Volume=	18.968 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.9 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.00'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 4R: (new node)

Inflow	=	30.51 cfs @	12.46 hrs,	Volume=	5.704 af
Outflow	=	30.44 cfs @	12.50 hrs,	Volume=	5.693 af, Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.0 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.7 fps, Avg. Travel Time= 2.9 min

Peak Depth= 1.46'
Capacity at bank full= 84.14 cfs
42.0" Diameter Pipe n= 0.011 Length= 641.0' Slope= 0.0050 '/'

Reach 5R:

Inflow	=	14.55 cfs @	12.69 hrs,	Volume=	2.167 af
Outflow	=	14.51 cfs @	12.73 hrs,	Volume=	2.162 af, Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.0 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 2.5 min

Peak Depth= 1.00'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow	=	23.28 cfs @ 12.48 hrs, Volume=	3.829 af	
Outflow	=	23.24 cfs @ 12.55 hrs, Volume=	3.812 af, Atten= 0%, Lag= 4.4 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.9 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 5.8 min

Peak Depth= 1.62'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow	=	36.01 cfs @ 12.34 hrs, Volume=	5.472 af	
Outflow	=	35.92 cfs @ 12.37 hrs, Volume=	5.464 af, Atten= 0%, Lag= 1.8 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.35'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow	=	65.65 cfs @ 12.39 hrs, Volume=	8.898 af	
Outflow	=	65.64 cfs @ 12.39 hrs, Volume=	8.897 af, Atten= 0%, Lag= 0.1 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.3 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.3 fps, Avg. Travel Time= 0.2 min

Peak Depth= 1.59'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow	=	65.64 cfs @	12.39 hrs,	Volume=	8.897 af
Outflow	=	65.29 cfs @	12.44 hrs,	Volume=	8.880 af, Atten= 1%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.5 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 2.9 min

Peak Depth= 2.20'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow	=	92.70 cfs @	12.50 hrs,	Volume=	18.106 af
Outflow	=	92.45 cfs @	12.53 hrs,	Volume=	18.069 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.8 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 2.6 min

Peak Depth= 2.21'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow	=	20.88 cfs @	12.25 hrs,	Volume=	2.759 af
Outflow	=	20.67 cfs @	12.30 hrs,	Volume=	2.754 af, Atten= 1%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.2 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 3.6 fps, Avg. Travel Time= 3.1 min

Peak Depth= 0.85'
Capacity at bank full= 55.41 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R: (new node)

Inflow	=	8.04 cfs @	12.40 hrs,	Volume=	1.486 af
Outflow	=	8.02 cfs @	12.46 hrs,	Volume=	1.482 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 4.3 min

Peak Depth= 1.00'
Capacity at bank full= 16.00 cfs
24.0" Diameter Pipe n= 0.013 Length= 612.0' Slope= 0.0050 '/'

Reach 12W:

Inflow	=	37.72 cfs @	12.45 hrs, Volume=	6.258 af
Outflow	=	37.70 cfs @	12.45 hrs, Volume=	6.256 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.5 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 7.7 fps, Avg. Travel Time= 0.5 min

Peak Depth= 1.03'
Capacity at bank full= 147.66 cfs
36.0" Diameter Pipe n= 0.013 Length= 213.0' Slope= 0.0490 '/'

Reach 15R:

Inflow	=	16.30 cfs @	12.22 hrs, Volume=	1.420 af
Outflow	=	16.28 cfs @	12.22 hrs, Volume=	1.420 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.2 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.6 fps, Avg. Travel Time= 0.1 min

Peak Depth= 1.10'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	9.31 cfs @	12.17 hrs, Volume=	0.773 af
Outflow	=	9.12 cfs @	12.21 hrs, Volume=	0.771 af, Atten= 2%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.8 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 2.5 min

Peak Depth= 0.89'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	1.82 cfs @	12.09 hrs, Volume=	0.124 af
Outflow	=	1.70 cfs @	12.14 hrs, Volume=	0.124 af, Atten= 6%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 4.1 min

Peak Depth= 0.46'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 21R:

Inflow	=	7.75 cfs @	12.38 hrs, Volume=	1.428 af	
Outflow	=	7.74 cfs @	12.40 hrs, Volume=	1.426 af, Atten= 0%, Lag= 1.6 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.9 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 5.3 fps, Avg. Travel Time= 2.0 min

Peak Depth= 0.59'
Capacity at bank full= 23.49 cfs
18.0" Diameter Pipe n= 0.013 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow	=	8.05 cfs @	12.38 hrs, Volume=	1.487 af	
Outflow	=	8.04 cfs @	12.40 hrs, Volume=	1.486 af, Atten= 0%, Lag= 1.4 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.5 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.9 fps, Avg. Travel Time= 1.7 min

Peak Depth= 0.68'
Capacity at bank full= 31.99 cfs
24.0" Diameter Pipe n= 0.013 Length= 396.0' Slope= 0.0200 '/'

Reach 27R:

Inflow	=	15.62 cfs @	12.39 hrs, Volume=	2.881 af	
Outflow	=	15.60 cfs @	12.41 hrs, Volume=	2.878 af, Atten= 0%, Lag= 1.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.5 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 1.3 min

Peak Depth= 0.96'
Capacity at bank full= 33.55 cfs
24.0" Diameter Pipe n= 0.013 Length= 360.0' Slope= 0.0220 '/'

Reach 29R:

Inflow	=	142.14 cfs @	12.45 hrs, Volume=	22.331 af	
Outflow	=	141.62 cfs @	12.49 hrs, Volume=	22.296 af, Atten= 0%, Lag= 2.1 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.4 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 6.9 fps, Avg. Travel Time= 2.6 min

Peak Depth= 2.38'
Capacity at bank full= 308.18 cfs
60.0" Diameter Pipe n= 0.013 Length= 1,062.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	21.12 cfs @	12.40 hrs,	Volume=	3.326 af
Outflow	=	21.10 cfs @	12.41 hrs,	Volume=	3.324 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.8 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 1.2 min

Peak Depth= 0.96'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 333.0' Slope= 0.0200 '/'

Reach 34R:

Inflow	=	14.98 cfs @	12.42 hrs,	Volume=	2.459 af
Outflow	=	14.96 cfs @	12.44 hrs,	Volume=	2.457 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.5 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 6.7 fps, Avg. Travel Time= 1.2 min

Peak Depth= 0.73'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0550 '/'

Reach 40R: CHANNEL

Inflow	=	194.87 cfs @	12.49 hrs,	Volume=	35.928 af
Outflow	=	194.06 cfs @	12.56 hrs,	Volume=	35.798 af, Atten= 0%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.8 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 2.7 fps, Avg. Travel Time= 5.1 min

Peak Depth= 2.50'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 17.60 cfs @ 12.41 hrs, Volume= 2.975 af
Outflow = 17.38 cfs @ 12.56 hrs, Volume= 2.952 af, Atten= 1%, Lag= 8.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 11.7 min

Peak Depth= 0.70'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 42.21 cfs @ 12.17 hrs, Volume= 10.712 af
Outflow = 41.57 cfs @ 12.22 hrs, Volume= 10.680 af, Atten= 2%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 3.1 min

Peak Depth= 0.86'
Capacity at bank full= 1,142.31 cfs
8.00' x 4.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 41.52 cfs @ 12.16 hrs, Volume= 5.970 af
Outflow = 41.44 cfs @ 12.17 hrs, Volume= 5.969 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 21.7 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 9.4 fps, Avg. Travel Time= 0.5 min

Peak Depth= 0.89'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 8.58 cfs @ 12.28 hrs, Volume= 1.059 af
Outflow = 8.52 cfs @ 12.34 hrs, Volume= 1.056 af, Atten= 1%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.2 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 4.3 min

Peak Depth= 0.99'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Outflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 111x: (new node)

Inflow	=	35.77 cfs @	12.07 hrs, Volume=	5.171 af	
Outflow	=	33.31 cfs @	12.13 hrs, Volume=	5.158 af,	Atten= 7%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.3 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 4.4 min

Peak Depth= 1.25'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 1,426.0' Slope= 0.0200 '/'

Reach 113R: (new node)

Inflow	=	13.46 cfs @	12.10 hrs,	Volume=	0.962 af
Outflow	=	13.08 cfs @	12.12 hrs,	Volume=	0.961 af, Atten= 3%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.5 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.6 fps, Avg. Travel Time= 1.5 min

Peak Depth= 0.75'
Capacity at bank full= 45.24 cfs
24.0" Diameter Pipe n= 0.013 Length= 416.0' Slope= 0.0400 '/'

Reach 118R:

Inflow	=	7.37 cfs @	12.22 hrs,	Volume=	0.649 af
Outflow	=	7.25 cfs @	12.24 hrs,	Volume=	0.649 af, Atten= 2%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.3 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 4.1 fps, Avg. Travel Time= 1.6 min

Peak Depth= 0.69'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119W:

Inflow	=	11.77 cfs @	12.34 hrs,	Volume=	1.260 af
Outflow	=	11.71 cfs @	12.37 hrs,	Volume=	1.259 af, Atten= 1%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.5 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.7 fps, Avg. Travel Time= 2.1 min

Peak Depth= 0.91'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 121W: (new node)

Inflow	=	27.12 cfs @	12.51 hrs,	Volume=	5.001 af
Outflow	=	27.10 cfs @	12.52 hrs,	Volume=	4.999 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.9 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 7.6 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.84'
Capacity at bank full= 160.20 cfs
36.0" Diameter Pipe n= 0.013 Length= 312.0' Slope= 0.0577 '/'

Reach 122R:

Inflow	=	5.42 cfs @	12.23 hrs,	Volume=	0.502 af
Outflow	=	4.19 cfs @	12.62 hrs,	Volume=	0.488 af, Atten= 23%, Lag= 23.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.8 fps, Min. Travel Time= 13.4 min
Avg. Velocity = 0.8 fps, Avg. Travel Time= 30.5 min

Peak Depth= 0.21'
Capacity at bank full= 263.47 cfs
10.00' x 2.00' deep channel, n= 0.040 Length= 1,462.0' Slope= 0.0218 '/'
Side Slope Z-value= 5.0 '/'

Reach 123R: (new node)

Inflow	=	10.13 cfs @	12.21 hrs,	Volume=	1.324 af
Outflow	=	9.93 cfs @	12.23 hrs,	Volume=	1.322 af, Atten= 2%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.6 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 1.7 min

Peak Depth= 0.67'
Capacity at bank full= 64.85 cfs
30.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0250 '/'

Reach 124R: (new node)

Inflow	=	16.75 cfs @	12.54 hrs,	Volume=	2.847 af
Outflow	=	16.70 cfs @	12.57 hrs,	Volume=	2.843 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.9 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.7 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.02'
Capacity at bank full= 66.70 cfs
36.0" Diameter Pipe n= 0.013 Length= 380.0' Slope= 0.0100 '/'

Reach 130W: (new node)

Inflow = 23.01 cfs @ 12.55 hrs, Volume= 4.272 af
Outflow = 23.00 cfs @ 12.57 hrs, Volume= 4.268 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.9 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 5.9 fps, Avg. Travel Time= 1.5 min

Peak Depth= 0.90'
Capacity at bank full= 117.99 cfs
36.0" Diameter Pipe n= 0.013 Length= 511.0' Slope= 0.0313 '/'

Reach 134W: (new node)

Inflow = 15.53 cfs @ 12.58 hrs, Volume= 2.578 af
Outflow = 15.49 cfs @ 12.62 hrs, Volume= 2.573 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.6 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 6.5 fps, Avg. Travel Time= 2.6 min

Peak Depth= 0.74'
Capacity at bank full= 52.57 cfs
24.0" Diameter Pipe n= 0.013 Length= 1,000.0' Slope= 0.0540 '/'

Reach 136R: (new node)

Inflow = 7.90 cfs @ 12.52 hrs, Volume= 1.424 af
Outflow = 7.88 cfs @ 12.55 hrs, Volume= 1.422 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.1 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 6.4 fps, Avg. Travel Time= 1.6 min

Peak Depth= 0.52'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 616.0' Slope= 0.0550 '/'

Reach 221R: (new node)

Inflow = 1.42 cfs @ 12.36 hrs, Volume= 0.292 af
Outflow = 1.41 cfs @ 12.38 hrs, Volume= 0.292 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.4 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 4.5 fps, Avg. Travel Time= 1.9 min

Peak Depth= 0.25'
Capacity at bank full= 10.60 cfs
12.0" Diameter Pipe n= 0.013 Length= 520.0' Slope= 0.0885 '/'

Reach 222W: (new node)

Inflow	=	0.78 cfs @	12.75 hrs, Volume=	0.274 af	
Outflow	=	0.78 cfs @	12.82 hrs, Volume=	0.273 af,	Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.6 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 4.0 fps, Avg. Travel Time= 3.7 min

Peak Depth= 0.19'
Capacity at bank full= 15.56 cfs
15.0" Diameter Pipe n= 0.013 Length= 900.0' Slope= 0.0580 '/'

Reach 225W: (new node)

Inflow	=	10.46 cfs @	12.56 hrs, Volume=	1.389 af	
Outflow	=	10.46 cfs @	12.57 hrs, Volume=	1.389 af,	Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.1 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.4 fps, Avg. Travel Time= 0.3 min

Peak Depth= 0.79'
Capacity at bank full= 31.99 cfs
24.0" Diameter Pipe n= 0.013 Length= 85.0' Slope= 0.0200 '/'

Reach 280R:

Inflow	=	12.84 cfs @	14.63 hrs, Volume=	4.474 af	
Outflow	=	12.84 cfs @	14.69 hrs, Volume=	4.446 af,	Atten= 0%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.6 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 3.4 min

Peak Depth= 0.61'
Capacity at bank full= 559.18 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 200.0' Slope= 0.0050 '/'
Side Slope Z-value= 5.0 '/'

Reach 313R: (new node)

Inflow	=	36.15 cfs @	12.13 hrs, Volume=	4.916 af	
Outflow	=	36.03 cfs @	12.15 hrs, Volume=	4.914 af,	Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.0 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 7.7 fps, Avg. Travel Time= 0.8 min

Peak Depth= 0.98'
Capacity at bank full= 156.42 cfs
36.0" Diameter Pipe n= 0.013 Length= 350.0' Slope= 0.0550 '/'

Reach 320R: (new node)

Inflow	=	26.86 cfs @	12.46 hrs,	Volume=	4.137 af
Outflow	=	26.77 cfs @	12.48 hrs,	Volume=	4.133 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.5 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.10'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 503.0' Slope= 0.0200 '/'

Reach 334R: (new node)

Inflow	=	21.15 cfs @	12.38 hrs,	Volume=	3.329 af
Outflow	=	21.12 cfs @	12.40 hrs,	Volume=	3.326 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.9 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 7.1 fps, Avg. Travel Time= 1.2 min

Peak Depth= 0.88'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0550 '/'

Reach 380R:

Inflow	=	5.56 cfs @	13.23 hrs,	Volume=	1.177 af
Outflow	=	5.33 cfs @	13.66 hrs,	Volume=	1.143 af, Atten= 4%, Lag= 25.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.2 fps, Min. Travel Time= 14.9 min
Avg. Velocity = 0.7 fps, Avg. Travel Time= 25.8 min

Peak Depth= 0.37'
Capacity at bank full= 559.18 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 1,090.0' Slope= 0.0050 '/'
Side Slope Z-value= 5.0 '/'

Reach 523R:

Inflow = 6.25 cfs @ 12.24 hrs, Volume= 0.580 af
Outflow = 5.72 cfs @ 12.40 hrs, Volume= 0.579 af, Atten= 8%, Lag= 9.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 2.3 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 524R:

Inflow = 11.31 cfs @ 12.18 hrs, Volume= 1.091 af
Outflow = 3.69 cfs @ 11.92 hrs, Volume= 1.091 af, Atten= 67%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 525R:

Inflow = 3.69 cfs @ 11.92 hrs, Volume= 1.091 af
Outflow = 3.54 cfs @ 11.99 hrs, Volume= 1.089 af, Atten= 4%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.3 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 2.6 min

Peak Depth= 0.76'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 526R:

Inflow = 3.54 cfs @ 11.99 hrs, Volume= 1.089 af
Outflow = 3.50 cfs @ 12.10 hrs, Volume= 1.085 af, Atten= 1%, Lag= 6.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 5.5 min

Peak Depth= 0.74'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 528R:

Inflow	=	3.50 cfs @	12.10 hrs, Volume=	1.085 af	
Outflow	=	3.49 cfs @	14.40 hrs, Volume=	1.076 af,	Atten= 0%, Lag= 138.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 13.9 min

Peak Depth= 0.70'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach DP#1: (new node)

Inflow	=	230.03 cfs @	12.61 hrs, Volume=	40.896 af	
Outflow	=	230.03 cfs @	12.61 hrs, Volume=	40.896 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow	=	12.84 cfs @	14.69 hrs, Volume=	4.446 af	
Outflow	=	12.84 cfs @	14.69 hrs, Volume=	4.446 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow	=	217.06 cfs @	12.54 hrs, Volume=	38.739 af	
Outflow	=	213.99 cfs @	12.60 hrs, Volume=	38.554 af,	Atten= 1%, Lag= 4.0 min
Primary	=	213.99 cfs @	12.60 hrs, Volume=	38.554 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 388.86' Storage= 51,771 cf
Plug-Flow detention time= 5.9 min calculated for 38.554 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Culvert
- 4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

Pond 2x: (new node)

Inflow	=	56.00 cfs @	12.17 hrs, Volume=	8.039 af	
Outflow	=	13.44 cfs @	13.40 hrs, Volume=	4.743 af,	Atten= 76%, Lag= 73.3 min
Primary	=	13.44 cfs @	13.40 hrs, Volume=	4.743 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.75' Storage= 202,737 cf
Plug-Flow detention time= 200.3 min calculated for 4.743 af (59% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	54,014	0	0
8.00	54,014	432,112	432,112

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	2.00'	**30.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 1.75' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 3P:

Inflow	=	32.25 cfs @	13.21 hrs, Volume=	6.530 af	
Outflow	=	12.84 cfs @	14.63 hrs, Volume=	4.474 af,	Atten= 60%, Lag= 85.2 min
Primary	=	12.84 cfs @	14.63 hrs, Volume=	4.474 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.66' Storage= 3.056 af
Plug-Flow detention time= 154.1 min calculated for 4.474 af (69% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
0.00	1.148	0.000	0.000
6.00	1.148	6.888	6.888

Primary OutFlow (Free Discharge)
└─1=Culvert
├─2=Culvert
└─3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= 0.99' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	5.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 4P: (new node)

Inflow	=	29.44 cfs @	12.80 hrs, Volume=	4.863 af	
Outflow	=	23.46 cfs @	13.13 hrs, Volume=	4.261 af,	Atten= 20%, Lag= 19.7 min
Primary	=	23.46 cfs @	13.13 hrs, Volume=	4.261 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.97' Storage= 59,332 cf
Plug-Flow detention time= 78.5 min calculated for 4.247 af (87% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	19,994	0	0
4.00	19,994	79,976	79,976
6.00	19,994	39,988	119,964

Primary OutFlow (Free Discharge)
1=Culvert
2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -22.00' S= 0.1100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -21.00' S= 0.1100 '/' n= 0.013 Cc= 0.900

Pond 5P: det pond

Inflow	=	56.74 cfs @	12.41 hrs,	Volume=	9.010 af
Outflow	=	30.34 cfs @	13.03 hrs,	Volume=	7.658 af, Atten= 47%, Lag= 37.0 min
Primary	=	30.34 cfs @	13.03 hrs,	Volume=	7.658 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.10' Storage= 139,558 cf
Plug-Flow detention time= 105.4 min calculated for 7.633 af (85% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	44,997	0	0
6.00	44,997	269,982	269,982

Primary OutFlow (Free Discharge)
1=Culvert
2=Culvert
3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	1.00'	**42.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.50' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	0.00'	**12.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	4.50'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 7P: P-LOT DET. POND

Inflow	=	16.49 cfs @	12.20 hrs,	Volume=	1.472 af
Outflow	=	7.07 cfs @	12.53 hrs,	Volume=	1.344 af, Atten= 57%, Lag= 19.8 min
Primary	=	7.07 cfs @	12.53 hrs,	Volume=	1.344 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.41' Storage= 24,874 cf
Plug-Flow detention time= 93.8 min calculated for 1.344 af (91% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 8P: (new node)

Inflow	=	21.42 cfs @	12.11 hrs, Volume=	1.614 af	
Outflow	=	8.05 cfs @	12.38 hrs, Volume=	1.487 af,	Atten= 62%, Lag= 16.4 min
Primary	=	8.05 cfs @	12.38 hrs, Volume=	1.487 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.52' Storage= 26,861 cf
Plug-Flow detention time= 93.5 min calculated for 1.487 af (92% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,622	0	0
4.00	17,622	70,488	70,488

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 9P: (new node)

Inflow	=	21.50 cfs @	12.10 hrs, Volume=	1.583 af	
Outflow	=	7.89 cfs @	12.38 hrs, Volume=	1.455 af,	Atten= 63%, Lag= 16.7 min
Primary	=	7.89 cfs @	12.38 hrs, Volume=	1.455 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.50' Storage= 26,579 cf
Plug-Flow detention time= 93.0 min calculated for 1.450 af (92% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 10P: P-LOT SUBSURFACE DET. POND

Inflow	=	19.59 cfs @	12.10 hrs,	Volume=	1.451 af
Outflow	=	7.69 cfs @	12.36 hrs,	Volume=	1.344 af, Atten= 61%, Lag= 15.5 min
Primary	=	7.69 cfs @	12.36 hrs,	Volume=	1.344 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.48' Storage= 23,273 cf
Plug-Flow detention time= 86.5 min calculated for 1.340 af (92% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 11P: P-LOT SUBSURFACE DET. POND

Inflow	=	15.10 cfs @	12.20 hrs,	Volume=	1.299 af
Outflow	=	7.28 cfs @	12.49 hrs,	Volume=	1.203 af, Atten= 52%, Lag= 17.9 min
Primary	=	7.28 cfs @	12.49 hrs,	Volume=	1.203 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.24' Storage= 19,479 cf
Plug-Flow detention time= 74.7 min calculated for 1.199 af (92% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 560.0' long Culvert** Ke= 0.600 Outlet Invert= -5.60' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 12C: P-LOT SUBSURFACE POND

Inflow	=	9.00 cfs @	12.27 hrs,	Volume=	1.005 af
Outflow	=	4.38 cfs @	12.62 hrs,	Volume=	0.916 af, Atten= 51%, Lag= 20.7 min
Primary	=	4.38 cfs @	12.62 hrs,	Volume=	0.916 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.06' Storage= 16,704 cf
Plug-Flow detention time= 106.4 min calculated for 0.913 af (91% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 13P: SHARED P-LOT SUBSURFACE DET. POND

Inflow	=	26.87 cfs @	12.09 hrs,	Volume=	1.894 af
Outflow	=	10.69 cfs @	12.32 hrs,	Volume=	1.772 af, Atten= 60%, Lag= 14.1 min
Primary	=	10.69 cfs @	12.32 hrs,	Volume=	1.772 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.83' Storage= 28,713 cf
Plug-Flow detention time= 76.7 min calculated for 1.772 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 14P: P-LOT SUBSURFACE DET.POND

Inflow	=	18.43 cfs @	12.08 hrs,	Volume=	1.243 af
Outflow	=	6.34 cfs @	12.38 hrs,	Volume=	1.136 af, Atten= 66%, Lag= 17.6 min
Primary	=	6.34 cfs @	12.38 hrs,	Volume=	1.136 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.32' Storage= 20,700 cf
Plug-Flow detention time= 87.6 min calculated for 1.136 af (91% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 15P: SUB-SURFACE POND

Inflow	=	15.32 cfs @	12.11 hrs,	Volume=	1.103 af
Outflow	=	8.13 cfs @	12.28 hrs,	Volume=	1.038 af, Atten= 47%, Lag= 10.2 min
Primary	=	8.13 cfs @	12.28 hrs,	Volume=	1.038 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.77' Storage= 13,892 cf
Plug-Flow detention time= 59.6 min calculated for 1.034 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.00' S= 0.0000 '/' n= 0.013 Cc= 0.900

Pond 16P: SUBSURFACE STORAGE POND PARKING LOT

Inflow	=	4.92 cfs @	12.05 hrs,	Volume=	0.324 af
Outflow	=	1.42 cfs @	12.36 hrs,	Volume=	0.292 af, Atten= 71%, Lag= 18.3 min
Primary	=	1.42 cfs @	12.36 hrs,	Volume=	0.292 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 0.76' Storage= 5,963 cf
Plug-Flow detention time= 110.2 min calculated for 0.292 af (90% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**12.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 17P:

Inflow	=	13.19 cfs @	12.09 hrs,	Volume=	0.914 af
Outflow	=	6.91 cfs @	12.24 hrs,	Volume=	0.872 af, Atten= 48%, Lag= 9.1 min
Primary	=	6.91 cfs @	12.24 hrs,	Volume=	0.872 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.39' Storage= 10,904 cf
Plug-Flow detention time= 53.0 min calculated for 0.872 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 18P:

Inflow	=	18.79 cfs @	12.18 hrs,	Volume=	1.551 af
Outflow	=	7.90 cfs @	12.52 hrs,	Volume=	1.424 af, Atten= 58%, Lag= 20.6 min
Primary	=	7.90 cfs @	12.52 hrs,	Volume=	1.424 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.51' Storage= 23,650 cf
Plug-Flow detention time= 76.3 min calculated for 1.419 af (92% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 19x: (new node)

Inflow	=	15.33 cfs @	12.11 hrs,	Volume=	1.107 af
Outflow	=	8.58 cfs @	12.28 hrs,	Volume=	1.059 af, Atten= 44%, Lag= 9.7 min
Primary	=	8.58 cfs @	12.28 hrs,	Volume=	1.059 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.59' Storage= 12,448 cf
Plug-Flow detention time= 47.1 min calculated for 1.056 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 20P: (new node)

Inflow	=	16.16 cfs @	12.30 hrs,	Volume=	1.649 af
Outflow	=	8.46 cfs @	12.64 hrs,	Volume=	1.524 af, Atten= 48%, Lag= 20.5 min
Primary	=	8.46 cfs @	12.64 hrs,	Volume=	1.524 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.57' Storage= 24,676 cf
Plug-Flow detention time= 76.4 min calculated for 1.519 af (92% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 22p: p-lot subsurface det. pond

Inflow	=	20.07 cfs @	12.10 hrs,	Volume=	1.417 af
Outflow	=	7.23 cfs @	12.40 hrs,	Volume=	1.296 af, Atten= 64%, Lag= 17.8 min
Primary	=	7.23 cfs @	12.40 hrs,	Volume=	1.296 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.51' Storage= 23,716 cf
Plug-Flow detention time= 89.0 min calculated for 1.296 af (91% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 23C: p-lot subsurface det. pond

Inflow	=	4.39 cfs @	12.17 hrs,	Volume=	0.359 af
Outflow	=	0.78 cfs @	12.75 hrs,	Volume=	0.274 af, Atten= 82%, Lag= 35.1 min
Primary	=	0.78 cfs @	12.75 hrs,	Volume=	0.274 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 0.53' Storage= 8,253 cf
Plug-Flow detention time= 171.6 min calculated for 0.274 af (76% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**15.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 24C: p-lot subsurface det. pond

Inflow	=	11.50 cfs @	12.07 hrs,	Volume=	0.774 af
Outflow	=	5.48 cfs @	12.23 hrs,	Volume=	0.733 af, Atten= 52%, Lag= 9.6 min
Primary	=	5.48 cfs @	12.23 hrs,	Volume=	0.733 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.29' Storage= 10,122 cf
Plug-Flow detention time= 61.5 min calculated for 0.733 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 25w: SUB-SURFACE PARKING LOT POND

Inflow	=	31.89 cfs @	12.11 hrs,	Volume=	2.426 af
Outflow	=	10.77 cfs @	12.44 hrs,	Volume=	2.210 af, Atten= 66%, Lag= 19.3 min
Primary	=	10.77 cfs @	12.44 hrs,	Volume=	2.210 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.84' Storage= 43,288 cf
Plug-Flow detention time= 102.4 min calculated for 2.210 af (91% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	23,550	0	0
4.00	23,550	94,200	94,200

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 311P: LSI POND

Inflow	=	31.96 cfs @	12.30 hrs,	Volume=	3.327 af
Outflow	=	24.20 cfs @	12.49 hrs,	Volume=	3.212 af, Atten= 24%, Lag= 11.4 min
Primary	=	24.20 cfs @	12.49 hrs,	Volume=	3.212 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 442.43' Storage= 0.659 af
Plug-Flow detention time= 38.4 min calculated for 3.212 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
439.50	0.000	0.000	0.000
440.00	0.217	0.054	0.054
442.00	0.263	0.480	0.534
444.00	0.313	0.576	1.110
446.00	0.366	0.679	1.789
448.00	0.422	0.788	2.577
450.00	0.479	0.901	3.478

Primary OutFlow (Free Discharge)
- 1=Orifice/Grate
- 2=Orifice/Grate
- 3=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	439.50'	**1.0" Vert. Orifice/Grate** C= 0.600
2	Primary	440.00'	**2.00' x 2.33' Vert. Orifice/Grate** C= 0.600
3	Primary	442.75'	**30.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

10-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=5.50"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=29.2 min CN=81 Area=22.450 ac Runoff= 51.49 cfs 5.970 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 119.27 cfs 15.354 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 34.62 cfs 5.014 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 11.85 cfs 0.942 af

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE
Tc=14.5 min CN=91 Area=7.390 ac Runoff= 28.24 cfs 2.596 af

Subcatchment 8c: CONVENTION CENTER
Tc=8.2 min CN=93 Area=11.270 ac Runoff= 53.08 cfs 4.156 af

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING
Tc=7.4 min CN=93 Area=6.740 ac Runoff= 32.60 cfs 2.486 af

Subcatchment 10S: area near trailer road
Tc=50.3 min CN=80 Area=11.560 ac Runoff= 19.69 cfs 2.961 af

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE
Tc=3.4 min CN=92 Area=5.000 ac Runoff= 27.13 cfs 1.803 af

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI
Tc=8.0 min CN=86 Area=6.770 ac Runoff= 28.29 cfs 2.091 af

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD
Tc=7.1 min CN=90 Area=5.010 ac Runoff= 23.33 cfs 1.720 af

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS
Tc=14.0 min CN=86 Area=7.960 ac Runoff= 27.90 cfs 2.455 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)
Tc=7.2 min CN=93 Area=7.350 ac Runoff= 35.77 cfs 2.711 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL
Tc=7.6 min CN=94 Area=7.230 ac Runoff= 35.20 cfs 2.726 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 11.95 cfs 1.127 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 34.70 cfs 3.383 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 18.26 cfs 2.606 af

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD
Tc=5.9 min CN=88 Area=0.700 ac Runoff= 3.24 cfs 0.228 af

Subcatchment 21L: AREA NEAR SERVICE STATION
Tc=3.8 min CN=84 Area=2.680 ac Runoff= 12.27 cfs 0.784 af

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE
Tc=12.1 min CN=87 Area=2.110 ac Runoff= 7.98 cfs 0.669 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=9.860 ac Runoff= 23.49 cfs 1.966 af

Subcatchment 24S: RESEARCH AND DEVELOPMENT
Tc=21.8 min CN=86 Area=10.130 ac Runoff= 29.90 cfs 3.117 af

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES
Tc=39.9 min CN=81 Area=10.650 ac Runoff= 21.09 cfs 2.822 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=84.9 min CN=72 Area=13.750 ac Runoff= 13.03 cfs 2.663 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=85.7 min CN=73 Area=13.620 ac Runoff= 13.29 cfs 2.733 af

Subcatchment 29S: CORPORATE RESIDENCE
Tc=59.6 min CN=86 Area=30.270 ac Runoff= 54.65 cfs 9.206 af

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL
Tc=7.1 min CN=88 Area=7.990 ac Runoff= 35.85 cfs 2.606 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 18.89 cfs 1.882 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 15.22 cfs 1.987 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 55.20 cfs 6.494 af

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=21.0 min CN=98 Area=3.960 ac Runoff= 14.25 cfs 1.608 af

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND
Tc=20.3 min CN=90 Area=15.060 ac Runoff= 49.74 cfs 5.154 af

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS
Tc=6.3 min CN=92 Area=4.740 ac Runoff= 23.29 cfs 1.708 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 15.27 cfs 1.297 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 39.78 cfs 3.472 af

Subcatchment 119L:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 22.14 cfs 2.416 af

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL
Tc=4.9 min CN=90 Area=4.030 ac Runoff= 19.95 cfs 1.384 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=15.4 min CN=72 Area=5.920 ac Runoff= 13.31 cfs 1.179 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=12.4 min CN=80 Area=12.310 ac Runoff= 38.80 cfs 3.194 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=75 Area=9.240 ac Runoff= 15.52 cfs 2.025 af

Subcatchment 213S: OFFICE ON AVENUE OF AMERICAS
Tc=5.8 min CN=91 Area=4.560 ac Runoff= 22.30 cfs 1.605 af

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET
Tc=15.2 min CN=80 Area=5.160 ac Runoff= 15.12 cfs 1.338 af

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL
Tc=3.4 min CN=94 Area=1.450 ac Runoff= 8.08 cfs 0.547 af

Subcatchment 230S: EDUCATION AND HOTELS AND REST
Tc=5.4 min CN=87 Area=7.290 ac Runoff= 33.39 cfs 2.316 af

Subcatchment 311S: LSI
Tc=22.3 min CN=89 Area=18.110 ac Runoff= 56.41 cfs 6.038 af

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD
Tc=7.4 min CN=88 Area=6.270 ac Runoff= 27.87 cfs 2.045 af

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE
Tc=3.5 min CN=91 Area=4.640 ac Runoff= 24.71 cfs 1.634 af

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD
Tc=6.2 min CN=89 Area=4.950 ac Runoff= 23.19 cfs 1.657 af

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=33.0 min CN=72 Area=7.950 ac Runoff= 12.95 cfs 1.573 af

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE
Tc=7.7 min CN=88 Area=6.220 ac Runoff= 27.38 cfs 2.028 af

Reach 1R: (new node) Inflow= 49.39 cfs 5.899 af
Length= 416.0' Max Vel= 12.0 fps Capacity= 80.79 cfs Outflow= 49.05 cfs 5.895 af

Reach 2R: (new node) Inflow= 75.50 cfs 14.116 af
Length= 670.0' Max Vel= 13.1 fps Capacity= 118.90 cfs Outflow= 75.41 cfs 14.101 af

Reach 3R: DP3 Inflow= 229.80 cfs 39.422 af
Length= 50.0' Max Vel= 6.7 fps Capacity= 1,521.75 cfs Outflow= 229.75 cfs 39.414 af

Reach 4R: (new node) Inflow= 57.62 cfs 10.240 af
Length= 641.0' Max Vel= 9.4 fps Capacity= 84.14 cfs Outflow= 57.51 cfs 10.226 af

Reach 5R: Inflow= 34.62 cfs 5.014 af
Length= 570.0' Max Vel= 8.8 fps Capacity= 60.37 cfs Outflow= 34.51 cfs 5.006 af

Reach 6R: Inflow= 52.32 cfs 8.389 af
Length= 350.0' Max Vel= 2.3 fps Capacity= 148.76 cfs Outflow= 52.27 cfs 8.362 af

Reach 7R: Inflow= 79.39 cfs 11.834 af
Length= 220.0' Max Vel= 4.4 fps Capacity= 504.53 cfs Outflow= 79.09 cfs 11.821 af

Reach 8R: Inflow= 133.84 cfs 18.315 af
Length= 45.0' Max Vel= 12.3 fps Capacity= 217.33 cfs Outflow= 133.81 cfs 18.314 af

Reach 9R: Inflow= 133.81 cfs 18.314 af
Length= 290.0' Max Vel= 4.1 fps Capacity= 278.93 cfs Outflow= 133.21 cfs 18.288 af

Reach 10R: Inflow= 215.21 cfs 37.486 af
Length= 280.0' Max Vel= 4.8 fps Capacity= 316.14 cfs Outflow= 214.65 cfs 37.435 af

Reach 11R: Inflow= 42.50 cfs 5.465 af
Length= 670.0' Max Vel= 9.7 fps Capacity= 55.41 cfs Outflow= 41.44 cfs 5.458 af

Reach 12R: (new node) Inflow= 14.33 cfs 2.568 af
Length= 612.0' Max Vel= 5.8 fps Capacity= 16.00 cfs Outflow= 14.29 cfs 2.563 af

Reach 12W: Inflow= 74.05 cfs 11.854 af
Length= 213.0' Max Vel= 20.9 fps Capacity= 147.66 cfs Outflow= 73.99 cfs 11.851 af

Reach 15R: Inflow= 32.49 cfs 2.860 af
Length= 22.0' Max Vel= 10.0 fps Capacity= 27.71 cfs Outflow= 29.65 cfs 2.860 af

Reach 16R: Inflow= 18.10 cfs 1.525 af
Length= 390.0' Max Vel= 8.0 fps Capacity= 22.62 cfs Outflow= 17.73 cfs 1.523 af

Reach 17R: Inflow= 3.24 cfs 0.228 af
Length= 465.0' Max Vel= 5.8 fps Capacity= 4.13 cfs Outflow= 3.03 cfs 0.228 af

Reach 21R: Inflow= 15.90 cfs 2.690 af
Length= 640.0' Max Vel= 14.3 fps Capacity= 23.49 cfs Outflow= 15.88 cfs 2.688 af

Reach 22R: Inflow= 14.34 cfs 2.570 af
Length= 396.0' Max Vel= 9.9 fps Capacity= 31.99 cfs Outflow= 14.33 cfs 2.568 af

Reach 27R: Inflow= 30.22 cfs 5.242 af
Length= 360.0' Max Vel= 12.1 fps Capacity= 33.55 cfs Outflow= 30.19 cfs 5.238 af

Reach 29R: Inflow= 253.62 cfs 40.420 af
Length= 1,062.0' Max Vel= 17.5 fps Capacity= 308.18 cfs Outflow= 252.92 cfs 40.372 af

Reach 30R: Inflow= 43.05 cfs 6.571 af
Length= 333.0' Max Vel= 13.0 fps Capacity= 94.33 cfs Outflow= 43.02 cfs 6.567 af

Reach 34R: Inflow= 30.98 cfs 4.973 af
Length= 500.0' Max Vel= 17.5 fps Capacity= 53.05 cfs Outflow= 30.94 cfs 4.970 af

Reach 40R: CHANNEL Inflow= 382.11 cfs 68.544 af
Length= 820.0' Max Vel= 6.9 fps Capacity= 539.62 cfs Outflow= 380.57 cfs 68.370 af

Reach 41R: SWALE Inflow= 32.17 cfs 5.495 af
Length= 890.0' Max Vel= 3.6 fps Capacity= 570.88 cfs Outflow= 31.91 cfs 5.465 af

Reach 42R: SWALE Inflow= 97.69 cfs 22.751 af
Length= 350.0' Max Vel= 4.6 fps Capacity= 1,142.31 cfs Outflow= 97.42 cfs 22.708 af

Reach 43R: Inflow= 87.22 cfs 11.862 af
Length= 255.0' Max Vel= 26.7 fps Capacity= 296.25 cfs Outflow= 87.07 cfs 11.859 af

Reach 44R: Inflow= 16.18 cfs 2.031 af
Length= 467.0' Max Vel= 5.0 fps Capacity= 36.45 cfs Outflow= 16.14 cfs 2.027 af

Reach 45R: Inflow= 0.00 cfs 0.000 af
Length= 126.0' Max Vel= 0.0 fps Capacity= 34.38 cfs Outflow= 0.00 cfs 0.000 af

Reach 46R: Inflow= 0.00 cfs 0.000 af
Length= 377.0' Max Vel= 0.0 fps Capacity= 40.58 cfs Outflow= 0.00 cfs 0.000 af

Reach 47R:
Length= 200.0' Max Vel= 0.0 fps Capacity= 14.00 cfs Outflow= 0.00 cfs 0.000 af

Reach 111x: (new node) Inflow= 64.10 cfs 9.327 af
Length= 1,426.0' Max Vel= 14.2 fps Capacity= 94.33 cfs Outflow= 59.79 cfs 9.309 af

Reach 113R: (new node) Inflow= 23.33 cfs 1.720 af
Length= 416.0' Max Vel= 14.5 fps Capacity= 45.24 cfs Outflow= 22.77 cfs 1.719 af

Reach 118R: Inflow= 15.12 cfs 1.338 af
Length= 400.0' Max Vel= 10.9 fps Capacity= 17.16 cfs Outflow= 14.89 cfs 1.336 af

Reach 119W: Inflow= 22.14 cfs 2.416 af
Length= 461.0' Max Vel= 9.8 fps Capacity= 27.72 cfs Outflow= 22.03 cfs 2.414 af

Reach 121W: (new node) Inflow= 53.58 cfs 9.443 af
Length= 312.0' Max Vel= 20.4 fps Capacity= 160.20 cfs Outflow= 53.55 cfs 9.440 af

Reach 122R: Inflow= 13.31 cfs 1.179 af
Length= 1,462.0' Max Vel= 2.6 fps Capacity= 263.47 cfs Outflow= 11.20 cfs 1.158 af

Reach 123R: (new node) Inflow= 27.07 cfs 3.124 af
Length= 500.0' Max Vel= 12.6 fps Capacity= 64.85 cfs Outflow= 26.89 cfs 3.121 af

Reach 124R: (new node) Inflow= 39.69 cfs 6.081 af
Length= 380.0' Max Vel= 9.8 fps Capacity= 66.70 cfs Outflow= 39.60 cfs 6.075 af

Reach 130W: (new node) Inflow= 46.04 cfs 8.116 af
Length= 511.0' Max Vel= 15.7 fps Capacity= 117.99 cfs Outflow= 45.96 cfs 8.110 af

Reach 134W: (new node) Inflow= 30.83 cfs 4.885 af
Length= 1,000.0' Max Vel= 17.4 fps Capacity= 52.57 cfs Outflow= 30.74 cfs 4.879 af

Reach 136R: (new node) Inflow= 17.51 cfs 3.028 af
Length= 616.0' Max Vel= 15.1 fps Capacity= 53.05 cfs Outflow= 17.48 cfs 3.025 af

Reach 221R: (new node) Inflow= 2.52 cfs 0.508 af
Length= 520.0' Max Vel= 11.1 fps Capacity= 10.60 cfs Outflow= 2.52 cfs 0.508 af

Reach 222W: (new node) Inflow= 2.10 cfs 0.565 af
Length= 900.0' Max Vel= 8.8 fps Capacity= 15.56 cfs Outflow= 2.10 cfs 0.563 af

Reach 225W: (new node) Inflow= 21.09 cfs 2.822 af
Length= 85.0' Max Vel= 10.9 fps Capacity= 31.99 cfs Outflow= 21.07 cfs 2.822 af

Reach 280R: Inflow= 41.30 cfs 11.504 af
Length= 200.0' Max Vel= 2.3 fps Capacity= 559.18 cfs Outflow= 41.28 cfs 11.470 af

Reach 313R: (new node) Inflow= 74.60 cfs 9.839 af
Length= 350.0' Max Vel= 21.9 fps Capacity= 156.42 cfs Outflow= 74.45 cfs 9.835 af

Reach 320R: (new node) Inflow= 54.74 cfs 7.529 af
Length= 503.0' Max Vel= 13.8 fps Capacity= 94.33 cfs Outflow= 54.38 cfs 7.523 af

Reach 334R: (new node) Inflow= 43.25 cfs 6.575 af
Length= 500.0' Max Vel= 18.8 fps Capacity= 53.05 cfs Outflow= 43.05 cfs 6.571 af

Reach 380R: Inflow= 13.29 cfs 2.733 af
Length= 1,090.0' Max Vel= 1.6 fps Capacity= 559.18 cfs Outflow= 12.98 cfs 2.682 af

Reach 523R: Inflow= 11.95 cfs 1.127 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 5.74 cfs 1.126 af

Reach 524R: Inflow= 17.51 cfs 2.068 af
Length= 80.0' Max Vel= 5.1 fps Capacity= 3.49 cfs Outflow= 3.62 cfs 2.068 af

Reach 525R: Inflow= 3.62 cfs 2.068 af
Length= 300.0' Max Vel= 3.3 fps Capacity= 11.72 cfs Outflow= 3.52 cfs 2.065 af

Reach 526R: Inflow= 3.52 cfs 2.065 af
Length= 550.0' Max Vel= 2.9 fps Capacity= 18.31 cfs Outflow= 3.50 cfs 2.059 af

Reach 528R: Inflow= 3.50 cfs 2.059 af
Length= 1,330.0' Max Vel= 2.8 fps Capacity= 29.20 cfs Outflow= 3.49 cfs 2.044 af

Reach DP#1: (new node) Inflow= 451.46 cfs 79.106 af
Outflow= 451.46 cfs 79.106 af

Reach DP#2: DESIGN POINT #2 Inflow= 41.28 cfs 11.470 af
Outflow= 41.28 cfs 11.470 af

Pond 1P: EXISTING POND Peak Storage= 104,426 cf Inflow= 428.16 cfs 74.340 af
Primary= 417.01 cfs 74.119 af Outflow= 417.01 cfs 74.119 af

Pond 2x: (new node) Peak Storage= 319,310 cf Inflow= 98.82 cfs 14.463 af
Primary= 36.94 cfs 10.891 af Outflow= 36.94 cfs 10.891 af

Pond 3P: Peak Storage= 5.197 af Inflow= 68.61 cfs 13.876 af
Primary= 41.30 cfs 11.504 af Outflow= 41.30 cfs 11.504 af

Pond 4P: (new node) Peak Storage= 86,581 cf Inflow= 54.65 cfs 9.206 af
Primary= 44.96 cfs 8.531 af Outflow= 44.96 cfs 8.531 af

Pond 5P: det pond Peak Storage= 223,094 cf Inflow= 115.23 cfs 17.309 af
Primary= 78.60 cfs 15.743 af Outflow= 78.60 cfs 15.743 af

Pond 7P: P-LOT DET. POND Peak Storage= 38,266 cf Inflow= 28.24 cfs 2.596 af
Primary= 13.54 cfs 2.439 af Outflow= 13.54 cfs 2.439 af

Pond 8P: (new node) Peak Storage= 40,035 cf Inflow= 35.20 cfs 2.726 af
Primary= 14.34 cfs 2.570 af Outflow= 14.34 cfs 2.570 af

Pond 9P: (new node) Peak Storage= 40,124 cf Inflow= 35.77 cfs 2.711 af
Primary= 14.34 cfs 2.554 af Outflow= 14.34 cfs 2.554 af

Pond 10P: P-LOT SUBSURFACE DET. POND Peak Storage= 34,921 cf Inflow= 32.60 cfs 2.486 af
Primary= 13.98 cfs 2.354 af Outflow= 13.98 cfs 2.354 af

Pond 11P: P-LOT SUBSURFACE DET. POND Peak Storage= 32,028 cf Inflow= 27.90 cfs 2.455 af
Primary= 14.46 cfs 2.334 af Outflow= 14.46 cfs 2.334 af

Pond 12C: P-LOT SUBSURFACE POND Peak Storage= 23,311 cf Inflow= 14.25 cfs 1.608 af
Primary= 7.72 cfs 1.500 af Outflow= 7.72 cfs 1.500 af

Pond 13P: SHARED P-LOT SUBSURFACE DET. POND Peak Storage= 45,380 cf Inflow= 45.57 cfs 3.313 af
Primary= 18.06 cfs 3.162 af Outflow= 18.06 cfs 3.162 af

Pond 14P: P-LOT SUBSURFACE DET.POND Peak Storage= 33,730 cf Inflow= 33.39 cfs 2.316 af
Primary= 13.39 cfs 2.182 af Outflow= 13.39 cfs 2.182 af

Pond 15P: SUB-SURFACE POND Peak Storage= 21,846 cf Inflow= 27.38 cfs 2.028 af
Primary= 14.96 cfs 1.948 af Outflow= 14.96 cfs 1.948 af

Pond 16P: SUBSURFACE STORAGE POND PARKING LOT Peak Storage= 9,007 cf Inflow= 8.08 cfs 0.547 af
Primary= 2.52 cfs 0.508 af Outflow= 2.52 cfs 0.508 af

Pond 17P: Peak Storage= 16,769 cf Inflow= 23.19 cfs 1.657 af
Primary= 13.29 cfs 1.604 af Outflow= 13.29 cfs 1.604 af

Pond 18P: Peak Storage= 44,317 cf Inflow= 38.80 cfs 3.194 af
Primary= 17.51 cfs 3.028 af Outflow= 17.51 cfs 3.028 af

Pond 19x: (new node) Peak Storage= 20,308 cf Inflow= 28.29 cfs 2.091 af
Primary= 16.18 cfs 2.031 af Outflow= 16.18 cfs 2.031 af

Pond 20P: (new node) Peak Storage= 41,153 cf Inflow= 29.90 cfs 3.117 af
Primary= 16.26 cfs 2.960 af Outflow= 16.26 cfs 2.960 af

Pond 22p: p-lot subsurface det. pond Peak Storage= 38,022 cf Inflow= 35.85 cfs 2.606 af
Primary= 14.87 cfs 2.453 af Outflow= 14.87 cfs 2.453 af

Pond 23C: p-lot subsurface det. pond Peak Storage= 14,272 cf Inflow= 7.98 cfs 0.669 af
Primary= 2.10 cfs 0.565 af Outflow= 2.10 cfs 0.565 af

Pond 24C: p-lot subsurface det. pond Peak Storage= 15,209 cf Inflow= 19.95 cfs 1.384 af
Primary= 10.87 cfs 1.333 af Outflow= 10.87 cfs 1.333 af

Pond 25w: SUB-SURFACE PARKING LOT POND Peak Storage= 67,903 cf Inflow= 53.08 cfs 4.156 af
Primary= 18.00 cfs 3.890 af Outflow= 18.00 cfs 3.890 af

Pond 311P: LSI POND Peak Storage= 0.957 af Inflow= 56.41 cfs 6.038 af
Primary= 49.39 cfs 5.899 af Outflow= 49.39 cfs 5.899 af

Runoff Area = 483.310 ac Volume = 141.475 af Average Depth = 3.51"

Subcatchment 1S: AREA NEAR POND

Runoff = 51.49 cfs @ 12.40 hrs, Volume= 5.970 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
9.810	77	Woods, Good, HSG D
2.940	98	Paved parking & roofs
9.700	80	Pasture/grassland/range, Good, HSG D
22.450	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.0150	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
13.0	670	0.0150	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	820	0.0150	7.9	570.88	**Trap/Vee/Rect Channel Flow,** Bot.W=6.00' D=4.00' Z= 3.0 '/' n= 0.040
29.2	1,640	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 119.27 cfs @ 12.44 hrs, Volume= 15.354 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 34.62 cfs @ 12.66 hrs, Volume= 5.014 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 11.85 cfs @ 12.14 hrs, Volume= 0.942 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE

Runoff = 28.24 cfs @ 12.19 hrs, Volume= 2.596 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.010	74	>75% Grass cover, Good, HSG C
5.380	98	Paved parking & roofs
7.390	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	190	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	20	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	105	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	320	0.0590	3.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.8	370	0.0216	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.0	520	0.0135	1.7		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.5	1,675	Total			

Subcatchment 8c: CONVENTION CENTER

Runoff = 53.08 cfs @ 12.11 hrs, Volume= 4.156 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
9.070	98	Paved parking & roofs
2.200	74	>75% Grass cover, Good, HSG C
11.270	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.5	50	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.6	970	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	1,170	Total			

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING

Runoff = 32.60 cfs @ 12.10 hrs, Volume= 2.486 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
5.420	98	Paved parking & roofs
1.320	74	>75% Grass cover, Good, HSG C
6.740	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	582	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	904	Total			

Subcatchment 10S: area near trailer road

Runoff = 19.69 cfs @ 12.69 hrs, Volume= 2.961 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
7.420	77	Woods, Good, HSG D
3.170	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
11.560	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.1	150	0.0159	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
9.3	353	0.0159	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.5	713	0.0112	1.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
50.3	1,781	Total			

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE

Runoff = 27.13 cfs @ 12.05 hrs, Volume= 1.803 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.650	98	Paved parking & roofs
1.350	74	Pasture/grassland/range, Good, HSG C
5.000	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.7	300	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	80	0.3300	23.4	421.71	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.00' Z= 3.0 '/' n= 0.040
3.4	530	Total			

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI

Runoff = 28.29 cfs @ 12.11 hrs, Volume= 2.091 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.940	74	Pasture/grassland/range, Good, HSG C
0.470	70	Woods, Good, HSG C
3.360	98	Paved parking & roofs
6.770	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0800	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.9	350	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	680	0.0210	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.0	1,180	Total			

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 23.33 cfs @ 12.10 hrs, Volume= 1.720 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.300	98	Paved parking & roofs
1.710	74	>75% Grass cover, Good, HSG C
5.010	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.9	350	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	65	0.3300	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	306	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	871	Total			

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS

Runoff = 27.90 cfs @ 12.19 hrs, Volume= 2.455 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.870	74	Pasture/grassland/range, Good, HSG C
4.090	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	150	0.0050	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.9	338	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	130	0.0462	4.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.8	585	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.0	1,203	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)

Runoff = 35.77 cfs @ 12.10 hrs, Volume= 2.711 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.500	74	Pasture/grassland/range, Good, HSG C
5.850	98	Paved parking & roofs
7.350	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	84	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	168	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	100	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	380	0.0950	4.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	88	0.0680	18.8	58.99	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
7.2	970	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL

Runoff = 35.20 cfs @ 12.11 hrs, Volume= 2.726 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.150	74	>75% Grass cover, Good, HSG C
6.080	98	Paved parking & roofs
7.230	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	115	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	35	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	115	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	0.0430	3.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	35	0.0200	8.4	14.86	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.6	947	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 11.95 cfs @ 12.24 hrs, Volume= 1.127 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 34.70 cfs @ 12.27 hrs, Volume= 3.383 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 18.26 cfs @ 12.60 hrs, Volume= 2.606 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD

Runoff = 3.24 cfs @ 12.09 hrs, Volume= 0.228 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.280	74	>75% Grass cover, Good, HSG C
0.420	98	Paved parking & roofs
0.700	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	150	0.1867	0.5		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.6	200	0.0833	5.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	350	Total			

Subcatchment 21L: AREA NEAR SERVICE STATION

Runoff = 12.27 cfs @ 12.06 hrs, Volume= 0.784 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.560	74	Pasture/grassland/range, Good, HSG C
1.120	98	Paved parking & roofs
2.680	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0722	2.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	127	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8	653	Total			

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE

Runoff = 7.98 cfs @ 12.16 hrs, Volume= 0.669 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.830	74	Pasture/grassland/range, Good, HSG C
0.130	70	Woods, Good, HSG C
1.150	98	Paved parking & roofs
2.110	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	150	0.0649	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.9	312	0.0649	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	275	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.1	737	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 23.49 cfs @ 12.19 hrs, Volume= 1.966 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.180	74	Pasture/grassland/range, Good, HSG C
7.310	70	Woods, Good, HSG C
0.370	98	PAVED
9.860	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: RESEARCH AND DEVELOPMENT

Runoff = 29.90 cfs @ 12.29 hrs, Volume= 3.117 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.550	74	Pasture/grassland/range, Good, HSG C
1.990	70	Woods, Good, HSG C
5.590	98	Paved parking & roofs
10.130	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.1116	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	242	0.1116	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	883	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.8	1,275	Total			

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES

Runoff = 21.09 cfs @ 12.55 hrs, Volume= 2.822 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.510	70	Woods, Good, HSG C
3.140	98	Paved parking & roofs
10.650	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.4	150	0.0200	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.3	500	0.0700	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	280	0.0930	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	24	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	215	0.1300	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
39.9	1,169	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 13.03 cfs @ 13.14 hrs, Volume= 2.663 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
9.790	70	Woods, Good, HSG C
0.060	87	Dirt roads, HSG C
3.520	74	Pasture/grassland/range, Good, HSG C
0.380	98	Paved parking & roofs
13.750	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	150	0.0800	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	410	0.0719	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
62.0	1,315	0.0050	0.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.5	470	0.0139	5.3	210.39	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
84.9	2,345	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 13.29 cfs @ 13.17 hrs, Volume= 2.733 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
9.040	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
0.960	98	Paved parking & roofs
13.620	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.4	150	0.0133	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
15.1	1,015	0.0500	1.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.2	358	0.0168	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.4	1,105	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.6	275	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
85.7	2,903	Total			

Subcatchment 29S: CORPORATE RESIDENCE

Runoff = 54.65 cfs @ 12.79 hrs, Volume= 9.206 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
5.940	74	Pasture/grassland/range, Good, HSG C
7.680	70	Woods, Good, HSG C
16.030	98	Paved parking & roofs
0.620	87	Dirt roads, HSG C
30.270	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.5	150	0.0100	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.5	370	0.0270	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.6	235	0.0940	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	175	0.2170	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	1,010	0.0180	2.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	680	0.0350	3.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	220	0.1640	6.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.9	200	0.0650	3.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
59.6	3,040	Total			

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL

Runoff = 35.85 cfs @ 12.10 hrs, Volume= 2.606 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.370	74	Pasture/grassland/range, Good, HSG C
4.620	98	Paved parking & roofs
7.990	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	290	0.0414	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	636	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	1,452	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 18.89 cfs @ 12.28 hrs, Volume= 1.882 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 15.22 cfs @ 12.54 hrs, Volume= 1.987 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 55.20 cfs @ 12.39 hrs, Volume= 6.494 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 14.25 cfs @ 12.27 hrs, Volume= 1.608 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.960	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.1	575	0.0133	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	533	0.0719	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.0	1,258	Total			

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND

Runoff = 49.74 cfs @ 12.27 hrs, Volume= 5.154 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
10.040	98	Paved parking & roofs
5.020	74	>75% Grass cover, Good, HSG C
15.060	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	150	0.1280	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	100	0.1280	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	1,020	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
20.3	1,270	Total			

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS

Runoff = 23.29 cfs @ 12.09 hrs, Volume= 1.708 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.520	98	Paved parking & roofs
1.220	74	Pasture/grassland/range, Good, HSG C
4.740	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.7	450	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	86	0.0233	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	686	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 15.27 cfs @ 12.18 hrs, Volume= 1.297 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 39.78 cfs @ 12.20 hrs, Volume= 3.472 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119L:

Runoff = 22.14 cfs @ 12.33 hrs, Volume= 2.416 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL

Runoff = 19.95 cfs @ 12.07 hrs, Volume= 1.384 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.350	74	>75% Grass cover, Good, HSG C
2.680	98	Paved parking & roofs
4.030	90	Weighted Average

Area (ac)	CN	Description
3.170	98	Paved parking & roofs
1.390	74	>75% Grass cover, Good, HSG C
4.560	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.2	390	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	88	0.0227	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.8	628	Total			

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET

Runoff = 15.12 cfs @ 12.21 hrs, Volume= 1.338 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.500	98	Paved parking & roofs
2.090	74	>75% Grass cover, Good, HSG C
1.570	70	Woods, Good, HSG C
5.160	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.1465	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.8	205	0.1465	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	190	0.0158	5.0	79.24	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
15.2	545	Total			

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL

Runoff = 8.08 cfs @ 12.05 hrs, Volume= 0.547 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.180	98	Paved parking & roofs
0.270	74	>75% Grass cover, Good, HSG C
1.450	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.3	35	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	252	0.0397	4.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	437	Total			

Subcatchment 230S: EDUCATION AND HOTELS AND REST

Runoff = 33.39 cfs @ 12.08 hrs, Volume= 2.316 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.920	98	Paved parking & roofs
3.370	74	>75% Grass cover, Good, HSG C
7.290	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.5	740	0.0568	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	446	0.0807	5.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	1,336	Total			

Subcatchment 311S: LSI

Runoff = 56.41 cfs @ 12.30 hrs, Volume= 6.038 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
11.570	98	Paved parking & roofs
6.540	74	>75% Grass cover, Good, HSG C
18.110	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	150	0.0300	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
3.4	250	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	1,180	0.0150	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.3	1,580	Total			

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD

Runoff = 27.87 cfs @ 12.10 hrs, Volume= 2.045 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.710	98	Paved parking & roofs
2.560	74	>75% Grass cover, Good, HSG C
6.270	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	136	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.8	493	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	375	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	1,154	Total			

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE

Runoff = 24.71 cfs @ 12.05 hrs, Volume= 1.634 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.190	98	Paved parking & roofs
1.450	74	>75% Grass cover, Good, HSG C
4.640	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	150	0.0400	2.1		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	550	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	700	Total			

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 23.19 cfs @ 12.09 hrs, Volume= 1.657 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
1.850	74	>75% Grass cover, Good, HSG C
3.100	98	Paved parking & roofs
4.950	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	394	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	189	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	170	0.3333	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	903	Total			

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 12.95 cfs @ 12.47 hrs, Volume= 1.573 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.220	74	Pasture/grassland/range, Good, HSG C
7.950	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.7	200	0.0200	0.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.7	700	0.2500	2.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.3	1,500	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
33.0	2,550	Total			

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE

Runoff = 27.38 cfs @ 12.11 hrs, Volume= 2.028 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.570	98	Paved parking & roofs
2.650	74	>75% Grass cover, Good, HSG C
6.220	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	150	0.0067	1.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	70	0.0067	1.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	510	0.0275	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	170	0.0706	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	465	0.0645	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	1,365	Total			

Reach 1R: (new node)

Inflow = 49.39 cfs @ 12.42 hrs, Volume= 5.899 af
Outflow = 49.05 cfs @ 12.44 hrs, Volume= 5.895 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 1.4 min

Peak Depth= 1.69'
Capacity at bank full= 80.79 cfs
36.0" Diameter Pipe n= 0.012 Length= 416.0' Slope= 0.0125 '/'

Reach 2R: (new node)

Inflow	=	75.50 cfs @	12.44 hrs, Volume=	14.116 af	
Outflow	=	75.41 cfs @	12.47 hrs, Volume=	14.101 af,	Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.1 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 6.3 fps, Avg. Travel Time= 1.8 min

Peak Depth= 2.02'
Capacity at bank full= 118.90 cfs
42.0" Diameter Pipe n= 0.011 Length= 670.0' Slope= 0.0100 '/'

Reach 3R: DP3

Inflow	=	229.80 cfs @	12.50 hrs, Volume=	39.422 af	
Outflow	=	229.75 cfs @	12.51 hrs, Volume=	39.414 af,	Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.7 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.70'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 4R: (new node)

Inflow	=	57.62 cfs @	12.41 hrs, Volume=	10.240 af	
Outflow	=	57.51 cfs @	12.44 hrs, Volume=	10.226 af,	Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.4 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 4.5 fps, Avg. Travel Time= 2.4 min

Peak Depth= 2.13'
Capacity at bank full= 84.14 cfs
42.0" Diameter Pipe n= 0.011 Length= 641.0' Slope= 0.0050 '/'

Reach 5R:

Inflow	=	34.62 cfs @	12.66 hrs, Volume=	5.014 af	
Outflow	=	34.51 cfs @	12.70 hrs, Volume=	5.006 af,	Atten= 0%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.8 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 4.5 fps, Avg. Travel Time= 2.1 min

Peak Depth= 1.63'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow	=	52.32 cfs @	12.47 hrs, Volume=	8.389 af	
Outflow	=	52.27 cfs @	12.53 hrs, Volume=	8.362 af,	Atten= 0%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.3 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 5.0 min

Peak Depth= 2.28'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow	=	79.39 cfs @	12.31 hrs, Volume=	11.834 af	
Outflow	=	79.09 cfs @	12.34 hrs, Volume=	11.821 af,	Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.4 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.89'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow	=	133.84 cfs @	12.37 hrs, Volume=	18.315 af	
Outflow	=	133.81 cfs @	12.37 hrs, Volume=	18.314 af,	Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.3 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.72'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow = 133.81 cfs @ 12.37 hrs, Volume= 18.314 af
Outflow = 133.21 cfs @ 12.41 hrs, Volume= 18.288 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.1 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 2.5 min

Peak Depth= 2.96'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow = 215.21 cfs @ 12.46 hrs, Volume= 37.486 af
Outflow = 214.65 cfs @ 12.50 hrs, Volume= 37.435 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.8 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 2.1 min

Peak Depth= 3.34'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow = 42.50 cfs @ 12.38 hrs, Volume= 5.465 af
Outflow = 41.44 cfs @ 12.39 hrs, Volume= 5.458 af, Atten= 3%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.7 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 4.2 fps, Avg. Travel Time= 2.7 min

Peak Depth= 1.30'
Capacity at bank full= 55.41 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R: (new node)

Inflow = 14.33 cfs @ 12.37 hrs, Volume= 2.568 af
Outflow = 14.29 cfs @ 12.43 hrs, Volume= 2.563 af, Atten= 0%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.8 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 3.6 min

Peak Depth= 1.48'
Capacity at bank full= 16.00 cfs
24.0" Diameter Pipe n= 0.013 Length= 612.0' Slope= 0.0050 '/'

Reach 12W:

Inflow	=	74.05 cfs @	12.42 hrs, Volume=	11.854 af	
Outflow	=	73.99 cfs @	12.43 hrs, Volume=	11.851 af,	Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 20.9 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 9.5 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.50'
Capacity at bank full= 147.66 cfs
36.0" Diameter Pipe n= 0.013 Length= 213.0' Slope= 0.0490 '/'

Reach 15R:

Inflow	=	32.49 cfs @	12.21 hrs, Volume=	2.860 af	
Outflow	=	29.65 cfs @	12.16 hrs, Volume=	2.860 af,	Atten= 9%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.2 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	18.10 cfs @	12.17 hrs, Volume=	1.525 af	
Outflow	=	17.73 cfs @	12.20 hrs, Volume=	1.523 af,	Atten= 2%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.0 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 2.1 min

Peak Depth= 1.34'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	3.24 cfs @	12.09 hrs, Volume=	0.228 af	
Outflow	=	3.03 cfs @	12.13 hrs, Volume=	0.228 af,	Atten= 6%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.8 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 3.5 min

Peak Depth= 0.66'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 21R:

Inflow	=	15.90 cfs @	12.31 hrs,	Volume=	2.690 af
Outflow	=	15.88 cfs @	12.33 hrs,	Volume=	2.688 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.3 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 6.6 fps, Avg. Travel Time= 1.6 min

Peak Depth= 0.90'
Capacity at bank full= 23.49 cfs
18.0" Diameter Pipe n= 0.013 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow	=	14.34 cfs @	12.35 hrs,	Volume=	2.570 af
Outflow	=	14.33 cfs @	12.37 hrs,	Volume=	2.568 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.9 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.94'
Capacity at bank full= 31.99 cfs
24.0" Diameter Pipe n= 0.013 Length= 396.0' Slope= 0.0200 '/'

Reach 27R:

Inflow	=	30.22 cfs @	12.34 hrs,	Volume=	5.242 af
Outflow	=	30.19 cfs @	12.35 hrs,	Volume=	5.238 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.1 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.8 fps, Avg. Travel Time= 1.0 min

Peak Depth= 1.48'
Capacity at bank full= 33.55 cfs
24.0" Diameter Pipe n= 0.013 Length= 360.0' Slope= 0.0220 '/'

Reach 29R:

Inflow	=	253.62 cfs @	12.43 hrs,	Volume=	40.420 af
Outflow	=	252.92 cfs @	12.46 hrs,	Volume=	40.372 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.5 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 8.5 fps, Avg. Travel Time= 2.1 min

Peak Depth= 3.45'
Capacity at bank full= 308.18 cfs
60.0" Diameter Pipe n= 0.013 Length= 1,062.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	43.05 cfs @	12.33 hrs, Volume=	6.571 af	
Outflow	=	43.02 cfs @	12.35 hrs, Volume=	6.567 af, Atten= 0%, Lag= 1.2 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.0 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 5.7 fps, Avg. Travel Time= 1.0 min

Peak Depth= 1.42'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 333.0' Slope= 0.0200 '/'

Reach 34R:

Inflow	=	30.98 cfs @	12.43 hrs, Volume=	4.973 af	
Outflow	=	30.94 cfs @	12.43 hrs, Volume=	4.970 af, Atten= 0%, Lag= 0.2 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.5 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 7.8 fps, Avg. Travel Time= 1.1 min

Peak Depth= 1.10'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0550 '/'

Reach 40R: CHANNEL

Inflow	=	382.11 cfs @	12.47 hrs, Volume=	68.544 af	
Outflow	=	380.57 cfs @	12.52 hrs, Volume=	68.370 af, Atten= 0%, Lag= 3.5 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.9 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 3.3 fps, Avg. Travel Time= 4.1 min

Peak Depth= 3.42'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 32.17 cfs @ 12.38 hrs, Volume= 5.495 af
Outflow = 31.91 cfs @ 12.51 hrs, Volume= 5.465 af, Atten= 1%, Lag= 7.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 9.5 min

Peak Depth= 0.98'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 97.69 cfs @ 12.43 hrs, Volume= 22.751 af
Outflow = 97.42 cfs @ 12.45 hrs, Volume= 22.708 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.6 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 2.6 min

Peak Depth= 1.31'
Capacity at bank full= 1,142.31 cfs
8.00' x 4.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 87.22 cfs @ 12.16 hrs, Volume= 11.862 af
Outflow = 87.07 cfs @ 12.17 hrs, Volume= 11.859 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 26.7 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 11.5 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.30'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 16.18 cfs @ 12.27 hrs, Volume= 2.031 af
Outflow = 16.14 cfs @ 12.31 hrs, Volume= 2.027 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 3.7 min

Peak Depth= 1.40'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Outflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 111x: (new node)

Inflow	=	64.10 cfs @	12.07 hrs,	Volume=	9.327 af
Outflow	=	59.79 cfs @	12.47 hrs,	Volume=	9.309 af, Atten= 7%, Lag= 24.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.2 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 6.6 fps, Avg. Travel Time= 3.6 min

Peak Depth= 1.78'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 1,426.0' Slope= 0.0200 '/'

Reach 113R: (new node)

Inflow	=	23.33 cfs @	12.10 hrs, Volume=	1.720 af	
Outflow	=	22.77 cfs @	12.11 hrs, Volume=	1.719 af,	Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.5 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.5 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.02'
Capacity at bank full= 45.24 cfs
24.0" Diameter Pipe n= 0.013 Length= 416.0' Slope= 0.0400 '/'

Reach 118R:

Inflow	=	15.12 cfs @	12.21 hrs, Volume=	1.338 af	
Outflow	=	14.89 cfs @	12.23 hrs, Volume=	1.336 af,	Atten= 2%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.9 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 1.4 min

Peak Depth= 1.09'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119W:

Inflow	=	22.14 cfs @	12.33 hrs, Volume=	2.416 af	
Outflow	=	22.03 cfs @	12.36 hrs, Volume=	2.414 af,	Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.8 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.2 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.35'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 121W: (new node)

Inflow	=	53.58 cfs @	12.48 hrs, Volume=	9.443 af	
Outflow	=	53.55 cfs @	12.49 hrs, Volume=	9.440 af,	Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 20.4 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 9.4 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.20'
Capacity at bank full= 160.20 cfs
36.0" Diameter Pipe n= 0.013 Length= 312.0' Slope= 0.0577 '/'

Reach 122R:

Inflow	=	13.31 cfs @	12.22 hrs, Volume=	1.179 af
Outflow	=	11.20 cfs @	12.49 hrs, Volume=	1.158 af, Atten= 16%, Lag= 16.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.6 fps, Min. Travel Time= 9.5 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 24.7 min

Peak Depth= 0.37'
Capacity at bank full= 263.47 cfs
10.00' x 2.00' deep channel, n= 0.040 Length= 1,462.0' Slope= 0.0218 '/'
Side Slope Z-value= 5.0 '/'

Reach 123R: (new node)

Inflow	=	27.07 cfs @	12.21 hrs, Volume=	3.124 af
Outflow	=	26.89 cfs @	12.22 hrs, Volume=	3.121 af, Atten= 1%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.6 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 6.0 fps, Avg. Travel Time= 1.4 min

Peak Depth= 1.13'
Capacity at bank full= 64.85 cfs
30.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0250 '/'

Reach 124R: (new node)

Inflow	=	39.69 cfs @	12.43 hrs, Volume=	6.081 af
Outflow	=	39.60 cfs @	12.45 hrs, Volume=	6.075 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.8 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.3 fps, Avg. Travel Time= 1.5 min

Peak Depth= 1.67'
Capacity at bank full= 66.70 cfs
36.0" Diameter Pipe n= 0.013 Length= 380.0' Slope= 0.0100 '/'

Reach 130W: (new node)

Inflow	=	46.04 cfs @	12.51 hrs,	Volume=	8.116 af
Outflow	=	45.96 cfs @	12.53 hrs,	Volume=	8.110 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.7 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 7.2 fps, Avg. Travel Time= 1.2 min

Peak Depth= 1.30'
Capacity at bank full= 117.99 cfs
36.0" Diameter Pipe n= 0.013 Length= 511.0' Slope= 0.0313 '/'

Reach 134W: (new node)

Inflow	=	30.83 cfs @	12.56 hrs,	Volume=	4.885 af
Outflow	=	30.74 cfs @	12.59 hrs,	Volume=	4.879 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.4 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 7.9 fps, Avg. Travel Time= 2.1 min

Peak Depth= 1.10'
Capacity at bank full= 52.57 cfs
24.0" Diameter Pipe n= 0.013 Length= 1,000.0' Slope= 0.0540 '/'

Reach 136R: (new node)

Inflow	=	17.51 cfs @	12.47 hrs,	Volume=	3.028 af
Outflow	=	17.48 cfs @	12.49 hrs,	Volume=	3.025 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.1 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 7.3 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.79'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 616.0' Slope= 0.0550 '/'

Reach 221R: (new node)

Inflow	=	2.52 cfs @	12.32 hrs,	Volume=	0.508 af
Outflow	=	2.52 cfs @	12.35 hrs,	Volume=	0.508 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.1 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 1.6 min

Peak Depth= 0.33'
Capacity at bank full= 10.60 cfs
12.0" Diameter Pipe n= 0.013 Length= 520.0' Slope= 0.0885 '/'

Reach 222W: (new node)

Inflow	=	2.10 cfs @	12.61 hrs,	Volume=	0.565 af
Outflow	=	2.10 cfs @	12.66 hrs,	Volume=	0.563 af, Atten= 0%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.8 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 4.6 fps, Avg. Travel Time= 3.3 min

Peak Depth= 0.31'
Capacity at bank full= 15.56 cfs
15.0" Diameter Pipe n= 0.013 Length= 900.0' Slope= 0.0580 '/'

Reach 225W: (new node)

Inflow	=	21.09 cfs @	12.55 hrs,	Volume=	2.822 af
Outflow	=	21.07 cfs @	12.55 hrs,	Volume=	2.822 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.9 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.18'
Capacity at bank full= 31.99 cfs
24.0" Diameter Pipe n= 0.013 Length= 85.0' Slope= 0.0200 '/'

Reach 280R:

Inflow	=	41.30 cfs @	13.95 hrs,	Volume=	11.504 af
Outflow	=	41.28 cfs @	13.99 hrs,	Volume=	11.470 af, Atten= 0%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.3 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 2.9 min

Peak Depth= 1.14'
Capacity at bank full= 559.18 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 200.0' Slope= 0.0050 '/'
Side Slope Z-value= 5.0 '/'

Reach 313R: (new node)

Inflow	=	74.60 cfs @	12.14 hrs,	Volume=	9.839 af
Outflow	=	74.45 cfs @	12.15 hrs,	Volume=	9.835 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 21.9 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 9.5 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.46'
Capacity at bank full= 156.42 cfs
36.0" Diameter Pipe n= 0.013 Length= 350.0' Slope= 0.0550 '/'

Reach 320R: (new node)

Inflow	=	54.74 cfs @	12.42 hrs,	Volume=	7.529 af
Outflow	=	54.38 cfs @	12.44 hrs,	Volume=	7.523 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.8 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 6.2 fps, Avg. Travel Time= 1.4 min

Peak Depth= 1.64'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 503.0' Slope= 0.0200 '/'

Reach 334R: (new node)

Inflow	=	43.25 cfs @	12.31 hrs,	Volume=	6.575 af
Outflow	=	43.05 cfs @	12.33 hrs,	Volume=	6.571 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 8.4 fps, Avg. Travel Time= 1.0 min

Peak Depth= 1.37'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0550 '/'

Reach 380R:

Inflow	=	13.29 cfs @	13.17 hrs,	Volume=	2.733 af
Outflow	=	12.98 cfs @	13.49 hrs,	Volume=	2.682 af, Atten= 2%, Lag= 19.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.6 fps, Min. Travel Time= 11.1 min
Avg. Velocity = 0.8 fps, Avg. Travel Time= 21.4 min

Peak Depth= 0.61'
Capacity at bank full= 559.18 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 1,090.0' Slope= 0.0050 '/'
Side Slope Z-value= 5.0 '/'

Reach 523R:

Inflow = 11.95 cfs @ 12.24 hrs, Volume= 1.127 af
Outflow = 5.74 cfs @ 12.11 hrs, Volume= 1.126 af, Atten= 52%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 524R:

Inflow = 17.51 cfs @ 12.13 hrs, Volume= 2.068 af
Outflow = 3.62 cfs @ 11.72 hrs, Volume= 2.068 af, Atten= 79%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.5 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 525R:

Inflow = 3.62 cfs @ 11.72 hrs, Volume= 2.068 af
Outflow = 3.52 cfs @ 11.81 hrs, Volume= 2.065 af, Atten= 3%, Lag= 5.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.3 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 2.2 min

Peak Depth= 0.76'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 526R:

Inflow = 3.52 cfs @ 11.81 hrs, Volume= 2.065 af
Outflow = 3.50 cfs @ 17.35 hrs, Volume= 2.059 af, Atten= 1%, Lag= 332.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 4.6 min

Peak Depth= 0.74'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 528R:

Inflow	=	3.50 cfs @	17.35 hrs, Volume=	2.059 af	
Outflow	=	3.49 cfs @	17.45 hrs, Volume=	2.044 af,	Atten= 0%, Lag= 6.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 11.5 min

Peak Depth= 0.70'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach DP#1: (new node)

Inflow	=	451.46 cfs @	12.59 hrs, Volume=	79.106 af	
Outflow	=	451.46 cfs @	12.59 hrs, Volume=	79.106 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow	=	41.28 cfs @	13.99 hrs, Volume=	11.470 af	
Outflow	=	41.28 cfs @	13.99 hrs, Volume=	11.470 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow	=	428.16 cfs @	12.50 hrs, Volume=	74.340 af	
Outflow	=	417.01 cfs @	12.59 hrs, Volume=	74.119 af,	Atten= 3%, Lag= 5.2 min
Primary	=	417.01 cfs @	12.59 hrs, Volume=	74.119 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 391.33' Storage= 104,426 cf
Plug-Flow detention time= 5.0 min calculated for 73.873 af (99% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
1=Culvert
2=Culvert
3=Culvert
4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

Pond 2x: (new node)

Inflow	=	98.82 cfs @	12.17 hrs,	Volume=	14.463 af
Outflow	=	36.94 cfs @	13.00 hrs,	Volume=	10.891 af, Atten= 63%, Lag= 50.0 min
Primary	=	36.94 cfs @	13.00 hrs,	Volume=	10.891 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 5.91' Storage= 319,310 cf
Plug-Flow detention time= 161.6 min calculated for 10.891 af (75% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	54,014	0	0
8.00	54,014	432,112	432,112

Primary OutFlow (Free Discharge)
1=Culvert
2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	2.00'	**30.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 1.75' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 3P:

Inflow	=	68.61 cfs @	13.19 hrs,	Volume=	13.876 af
Outflow	=	41.30 cfs @	13.95 hrs,	Volume=	11.504 af, Atten= 40%, Lag= 45.8 min
Primary	=	41.30 cfs @	13.95 hrs,	Volume=	11.504 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 4.53' Storage= 5.197 af
Plug-Flow detention time= 108.1 min calculated for 11.466 af (83% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
0.00	1.148	0.000	0.000
6.00	1.148	6.888	6.888

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= 0.99' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	5.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 4P: (new node)

Inflow	=	54.65 cfs @	12.79 hrs,	Volume=	9.206 af
Outflow	=	44.96 cfs @	13.09 hrs,	Volume=	8.531 af, Atten= 18%, Lag= 17.9 min
Primary	=	44.96 cfs @	13.09 hrs,	Volume=	8.531 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 4.33' Storage= 86,581 cf
Plug-Flow detention time= 59.6 min calculated for 8.531 af (93% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	19,994	0	0
4.00	19,994	79,976	79,976
6.00	19,994	39,988	119,964

Primary OutFlow (Free Discharge)
└1=Culvert
└2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -22.00' S= 0.1100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -21.00' S= 0.1100 '/' n= 0.013 Cc= 0.900

Pond 5P: det pond

Inflow	=	115.23 cfs @	12.40 hrs,	Volume=	17.309 af
Outflow	=	78.60 cfs @	12.78 hrs,	Volume=	15.743 af, Atten= 32%, Lag= 22.8 min
Primary	=	78.60 cfs @	12.78 hrs,	Volume=	15.743 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 4.96' Storage= 223,094 cf
Plug-Flow detention time= 80.1 min calculated for 15.743 af (91% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	44,997	0	0
6.00	44,997	269,982	269,982

Primary OutFlow (Free Discharge)
└1=Culvert
└2=Culvert
└3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	1.00'	**42.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.50' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	0.00'	**12.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	4.50'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.5 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 7P: P-LOT DET. POND

Inflow	=	28.24 cfs @	12.19 hrs,	Volume=	2.596 af
Outflow	=	13.54 cfs @	12.48 hrs,	Volume=	2.439 af, Atten= 52%, Lag= 17.3 min
Primary	=	13.54 cfs @	12.48 hrs,	Volume=	2.439 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.17' Storage= 38,266 cf
Plug-Flow detention time= 77.2 min calculated for 2.431 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 8P: (new node)

Inflow	=	35.20 cfs @	12.11 hrs,	Volume=	2.726 af
Outflow	=	14.34 cfs @	12.35 hrs,	Volume=	2.570 af, Atten= 59%, Lag= 14.6 min
Primary	=	14.34 cfs @	12.35 hrs,	Volume=	2.570 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.27' Storage= 40,035 cf
Plug-Flow detention time= 77.5 min calculated for 2.562 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,622	0	0
4.00	17,622	70,488	70,488

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 9P: (new node)

Inflow	=	35.77 cfs @	12.10 hrs,	Volume=	2.711 af
Outflow	=	14.34 cfs @	12.34 hrs,	Volume=	2.554 af, Atten= 60%, Lag= 14.5 min
Primary	=	14.34 cfs @	12.34 hrs,	Volume=	2.554 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.27' Storage= 40,124 cf
Plug-Flow detention time= 77.6 min calculated for 2.554 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 10P: P-LOT SUBSURFACE DET. POND

Inflow	=	32.60 cfs @	12.10 hrs,	Volume=	2.486 af
Outflow	=	13.98 cfs @	12.32 hrs,	Volume=	2.354 af, Atten= 57%, Lag= 13.3 min
Primary	=	13.98 cfs @	12.32 hrs,	Volume=	2.354 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.22' Storage= 34,921 cf
Plug-Flow detention time= 71.6 min calculated for 2.346 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 11P: P-LOT SUBSURFACE DET. POND

Inflow	=	27.90 cfs @	12.19 hrs,	Volume=	2.455 af
Outflow	=	14.46 cfs @	12.45 hrs,	Volume=	2.334 af, Atten= 48%, Lag= 15.8 min
Primary	=	14.46 cfs @	12.45 hrs,	Volume=	2.334 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.04' Storage= 32,028 cf
Plug-Flow detention time= 60.2 min calculated for 2.326 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 560.0' long Culvert** Ke= 0.600 Outlet Invert= -5.60' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 12C: P-LOT SUBSURFACE POND

Inflow	=	14.25 cfs @	12.27 hrs,	Volume=	1.608 af
Outflow	=	7.72 cfs @	12.58 hrs,	Volume=	1.500 af, Atten= 46%, Lag= 18.4 min
Primary	=	7.72 cfs @	12.58 hrs,	Volume=	1.500 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.48' Storage= 23,311 cf
Plug-Flow detention time= 88.6 min calculated for 1.500 af (93% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 13P: SHARED P-LOT SUBSURFACE DET. POND

Inflow	=	45.57 cfs @	12.09 hrs,	Volume=	3.313 af
Outflow	=	18.06 cfs @	12.32 hrs,	Volume=	3.162 af, Atten= 60%, Lag= 13.8 min
Primary	=	18.06 cfs @	12.32 hrs,	Volume=	3.162 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.89' Storage= 45,380 cf
Plug-Flow detention time= 64.3 min calculated for 3.151 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 14P: P-LOT SUBSURFACE DET.POND

Inflow	=	33.39 cfs @	12.08 hrs,	Volume=	2.316 af
Outflow	=	13.39 cfs @	12.31 hrs,	Volume=	2.182 af, Atten= 60%, Lag= 13.5 min
Primary	=	13.39 cfs @	12.31 hrs,	Volume=	2.182 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.15' Storage= 33,730 cf
Plug-Flow detention time= 70.4 min calculated for 2.175 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 15P: SUB-SURFACE POND

Inflow	=	27.38 cfs @	12.11 hrs,	Volume=	2.028 af
Outflow	=	14.96 cfs @	12.27 hrs,	Volume=	1.948 af, Atten= 45%, Lag= 9.5 min
Primary	=	14.96 cfs @	12.27 hrs,	Volume=	1.948 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.78' Storage= 21,846 cf
Plug-Flow detention time= 47.8 min calculated for 1.948 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.00' S= 0.0000 '/' n= 0.013 Cc= 0.900

Pond 16P: SUBSURFACE STORAGE POND PARKING LOT

Inflow	=	8.08 cfs @	12.05 hrs,	Volume=	0.547 af
Outflow	=	2.52 cfs @	12.32 hrs,	Volume=	0.508 af, Atten= 69%, Lag= 16.3 min
Primary	=	2.52 cfs @	12.32 hrs,	Volume=	0.508 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.15' Storage= 9,007 cf
Plug-Flow detention time= 92.1 min calculated for 0.507 af (93% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**12.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 17P:

Inflow	=	23.19 cfs @	12.09 hrs,	Volume=	1.657 af
Outflow	=	13.29 cfs @	12.22 hrs,	Volume=	1.604 af, Atten= 43%, Lag= 7.6 min
Primary	=	13.29 cfs @	12.22 hrs,	Volume=	1.604 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.14' Storage= 16,769 cf
Plug-Flow detention time= 42.6 min calculated for 1.599 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 18P:

Inflow	=	38.80 cfs @	12.17 hrs,	Volume=	3.194 af
Outflow	=	17.51 cfs @	12.47 hrs,	Volume=	3.028 af, Atten= 55%, Lag= 18.1 min
Primary	=	17.51 cfs @	12.47 hrs,	Volume=	3.028 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.82' Storage= 44,317 cf
Plug-Flow detention time= 60.4 min calculated for 3.028 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 19x: (new node)

Inflow	=	28.29 cfs @	12.11 hrs,	Volume=	2.091 af
Outflow	=	16.18 cfs @	12.27 hrs,	Volume=	2.031 af, Atten= 43%, Lag= 9.2 min
Primary	=	16.18 cfs @	12.27 hrs,	Volume=	2.031 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.59' Storage= 20,308 cf
Plug-Flow detention time= 38.0 min calculated for 2.031 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 20P: (new node)

Inflow	=	29.90 cfs @	12.29 hrs,	Volume=	3.117 af
Outflow	=	16.26 cfs @	12.61 hrs,	Volume=	2.960 af, Atten= 46%, Lag= 19.1 min
Primary	=	16.26 cfs @	12.61 hrs,	Volume=	2.960 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.62' Storage= 41,153 cf
Plug-Flow detention time= 62.4 min calculated for 2.950 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 22p: p-lot subsurface det. pond

Inflow	=	35.85 cfs @	12.10 hrs,	Volume=	2.606 af
Outflow	=	14.87 cfs @	12.34 hrs,	Volume=	2.453 af, Atten= 59%, Lag= 14.1 min
Primary	=	14.87 cfs @	12.34 hrs,	Volume=	2.453 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.42' Storage= 38,022 cf
Plug-Flow detention time= 71.9 min calculated for 2.445 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 23C: p-lot subsurface det. pond

Inflow	=	7.98 cfs @	12.16 hrs,	Volume=	0.669 af
Outflow	=	2.10 cfs @	12.61 hrs,	Volume=	0.565 af, Atten= 74%, Lag= 26.5 min
Primary	=	2.10 cfs @	12.61 hrs,	Volume=	0.565 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 0.91' Storage= 14,272 cf
Plug-Flow detention time= 142.8 min calculated for 0.565 af (84% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**15.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 24C: p-lot subsurface det. pond

Inflow	=	19.95 cfs @	12.07 hrs,	Volume=	1.384 af
Outflow	=	10.87 cfs @	12.20 hrs,	Volume=	1.333 af, Atten= 46%, Lag= 7.7 min
Primary	=	10.87 cfs @	12.20 hrs,	Volume=	1.333 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.94' Storage= 15,209 cf
Plug-Flow detention time= 49.6 min calculated for 1.333 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 25w: SUB-SURFACE PARKING LOT POND

Inflow	=	53.08 cfs @	12.11 hrs,	Volume=	4.156 af
Outflow	=	18.00 cfs @	12.43 hrs,	Volume=	3.890 af, Atten= 66%, Lag= 18.9 min
Primary	=	18.00 cfs @	12.43 hrs,	Volume=	3.890 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.88' Storage= 67,903 cf
Plug-Flow detention time= 87.6 min calculated for 3.890 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	23,550	0	0
4.00	23,550	94,200	94,200

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 311P: LSI POND

Inflow	=	56.41 cfs @	12.30 hrs,	Volume=	6.038 af
Outflow	=	49.39 cfs @	12.42 hrs,	Volume=	5.899 af, Atten= 12%, Lag= 7.3 min
Primary	=	49.39 cfs @	12.42 hrs,	Volume=	5.899 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 443.47' Storage= 0.957 af
Plug-Flow detention time= 30.8 min calculated for 5.899 af (98% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
439.50	0.000	0.000	0.000
440.00	0.217	0.054	0.054
442.00	0.263	0.480	0.534
444.00	0.313	0.576	1.110
446.00	0.366	0.679	1.789
448.00	0.422	0.788	2.577
450.00	0.479	0.901	3.478

Primary OutFlow (Free Discharge)
- 1=Orifice/Grate
- 2=Orifice/Grate
- 3=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	439.50'	**1.0" Vert. Orifice/Grate** C= 0.600
2	Primary	440.00'	**2.00' x 2.33' Vert. Orifice/Grate** C= 0.600
3	Primary	442.75'	**30.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

25-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=6.50"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=29.2 min CN=81 Area=22.450 ac Runoff= 64.87 cfs 7.579 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 143.93 cfs 18.718 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 45.55 cfs 6.598 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 14.45 cfs 1.162 af

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE
Tc=14.5 min CN=91 Area=7.390 ac Runoff= 34.06 cfs 3.164 af

Subcatchment 8c: CONVENTION CENTER
Tc=8.2 min CN=93 Area=11.270 ac Runoff= 63.57 cfs 5.023 af

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING
Tc=7.4 min CN=93 Area=6.740 ac Runoff= 39.03 cfs 3.004 af

Subcatchment 10S: area near trailer road
Tc=50.3 min CN=80 Area=11.560 ac Runoff= 24.94 cfs 3.776 af

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE
Tc=3.4 min CN=92 Area=5.000 ac Runoff= 32.58 cfs 2.188 af

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI
Tc=8.0 min CN=86 Area=6.770 ac Runoff= 34.79 cfs 2.601 af

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD
Tc=7.1 min CN=90 Area=5.010 ac Runoff= 28.23 cfs 2.104 af

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS
Tc=14.0 min CN=86 Area=7.960 ac Runoff= 34.33 cfs 3.054 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)
Tc=7.2 min CN=93 Area=7.350 ac Runoff= 42.82 cfs 3.276 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL
Tc=7.6 min CN=94 Area=7.230 ac Runoff= 42.02 cfs 3.282 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 14.84 cfs 1.414 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 43.71 cfs 4.294 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 22.70 cfs 3.268 af

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD
Tc=5.9 min CN=88 Area=0.700 ac Runoff= 3.95 cfs 0.282 af

Subcatchment 21L: AREA NEAR SERVICE STATION
Tc=3.8 min CN=84 Area=2.680 ac Runoff= 15.22 cfs 0.983 af

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE
Tc=12.1 min CN=87 Area=2.110 ac Runoff= 9.77 cfs 0.829 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=9.860 ac Runoff= 31.08 cfs 2.598 af

Subcatchment 24S: RESEARCH AND DEVELOPMENT
Tc=21.8 min CN=86 Area=10.130 ac Runoff= 36.80 cfs 3.878 af

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES
Tc=39.9 min CN=81 Area=10.650 ac Runoff= 26.57 cfs 3.583 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=84.9 min CN=72 Area=13.750 ac Runoff= 17.29 cfs 3.525 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=85.7 min CN=73 Area=13.620 ac Runoff= 17.51 cfs 3.600 af

Subcatchment 29S: CORPORATE RESIDENCE
Tc=59.6 min CN=86 Area=30.270 ac Runoff= 67.36 cfs 11.458 af

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL
Tc=7.1 min CN=88 Area=7.990 ac Runoff= 43.71 cfs 3.214 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 24.03 cfs 2.409 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 19.68 cfs 2.578 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 67.95 cfs 8.079 af

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=21.0 min CN=98 Area=3.960 ac Runoff= 16.86 cfs 1.908 af

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND
Tc=20.3 min CN=90 Area=15.060 ac Runoff= 60.23 cfs 6.307 af

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS
Tc=6.3 min CN=92 Area=4.740 ac Runoff= 27.97 cfs 2.073 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 19.13 cfs 1.639 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 50.59 cfs 4.444 af

Subcatchment 119L:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 27.37 cfs 3.018 af

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL
Tc=4.9 min CN=90 Area=4.030 ac Runoff= 24.14 cfs 1.693 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=15.4 min CN=72 Area=5.920 ac Runoff= 17.62 cfs 1.559 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=12.4 min CN=80 Area=12.310 ac Runoff= 49.10 cfs 4.070 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=75 Area=9.240 ac Runoff= 20.18 cfs 2.639 af

Subcatchment 213S: OFFICE ON AVENUE OF AMERICAS
Tc=5.8 min CN=91 Area=4.560 ac Runoff= 26.88 cfs 1.955 af

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET
Tc=15.2 min CN=80 Area=5.160 ac Runoff= 19.13 cfs 1.705 af

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL
Tc=3.4 min CN=94 Area=1.450 ac Runoff= 9.65 cfs 0.659 af

Subcatchment 230S: EDUCATION AND HOTELS AND REST
Tc=5.4 min CN=87 Area=7.290 ac Runoff= 40.86 cfs 2.868 af

Subcatchment 311S: LSI
Tc=22.3 min CN=89 Area=18.110 ac Runoff= 68.57 cfs 7.420 af

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD
Tc=7.4 min CN=88 Area=6.270 ac Runoff= 33.99 cfs 2.522 af

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE
Tc=3.5 min CN=91 Area=4.640 ac Runoff= 29.78 cfs 1.990 af

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD
Tc=6.2 min CN=89 Area=4.950 ac Runoff= 28.15 cfs 2.035 af

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=33.0 min CN=72 Area=7.950 ac Runoff= 17.14 cfs 2.080 af

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE
Tc=7.7 min CN=88 Area=6.220 ac Runoff= 33.39 cfs 2.501 af

Reach 1R: (new node) Inflow= 60.62 cfs 7.270 af
Length= 416.0' Max Vel= 12.5 fps Capacity= 80.79 cfs Outflow= 60.48 cfs 7.265 af

Reach 2R: (new node) Inflow= 88.81 cfs 17.258 af
Length= 670.0' Max Vel= 13.6 fps Capacity= 118.90 cfs Outflow= 88.75 cfs 17.242 af

Reach 3R: DP3 Inflow= 304.24 cfs 50.313 af
Length= 50.0' Max Vel= 7.5 fps Capacity= 1,521.75 cfs Outflow= 304.17 cfs 50.304 af

Reach 4R: (new node) Inflow= 67.26 cfs 12.539 af
Length= 641.0' Max Vel= 9.7 fps Capacity= 84.14 cfs Outflow= 67.19 cfs 12.523 af

Reach 5R: Inflow= 45.55 cfs 6.598 af
Length= 570.0' Max Vel= 9.4 fps Capacity= 60.37 cfs Outflow= 45.41 cfs 6.589 af

Reach 6R: Inflow= 67.87 cfs 10.883 af
Length= 350.0' Max Vel= 2.4 fps Capacity= 148.76 cfs Outflow= 67.80 cfs 10.852 af

Reach 7R: Inflow= 102.51 cfs 15.296 af
Length= 220.0' Max Vel= 4.7 fps Capacity= 504.53 cfs Outflow= 102.12 cfs 15.282 af

Reach 8R: Inflow= 169.33 cfs 23.361 af
Length= 45.0' Max Vel= 12.9 fps Capacity= 217.33 cfs Outflow= 169.29 cfs 23.359 af

Reach 9R: Inflow= 169.29 cfs 23.359 af
Length= 290.0' Max Vel= 4.4 fps Capacity= 278.93 cfs Outflow= 168.55 cfs 23.329 af

Reach 10R: Inflow= 285.11 cfs 47.792 af
Length= 280.0' Max Vel= 5.1 fps Capacity= 316.14 cfs Outflow= 284.57 cfs 47.735 af

Reach 11R: Inflow= 50.40 cfs 6.890 af
Length= 670.0' Max Vel= 10.0 fps Capacity= 55.41 cfs Outflow= 50.45 cfs 6.881 af

Reach 12R: (new node) Inflow= 16.30 cfs 3.112 af
Length= 612.0' Max Vel= 5.8 fps Capacity= 16.00 cfs Outflow= 16.29 cfs 3.106 af

Reach 12W: Inflow= 92.42 cfs 14.756 af
Length= 213.0' Max Vel= 22.0 fps Capacity= 147.66 cfs Outflow= 92.37 cfs 14.753 af

Reach 15R: Inflow= 39.26 cfs 3.622 af
Length= 22.0' Max Vel= 9.8 fps Capacity= 27.71 cfs Outflow= 30.08 cfs 3.622 af

Reach 16R: Inflow= 22.58 cfs 1.920 af
Length= 390.0' Max Vel= 8.2 fps Capacity= 22.62 cfs Outflow= 22.11 cfs 1.919 af

Reach 17R: Inflow= 3.95 cfs 0.282 af
Length= 465.0' Max Vel= 6.0 fps Capacity= 4.13 cfs Outflow= 3.70 cfs 0.281 af

Reach 21R: Inflow= 18.86 cfs 3.340 af
Length= 640.0' Max Vel= 14.8 fps Capacity= 23.49 cfs Outflow= 18.85 cfs 3.337 af

Reach 22R: Inflow= 16.30 cfs 3.114 af
Length= 396.0' Max Vel= 10.2 fps Capacity= 31.99 cfs Outflow= 16.30 cfs 3.112 af

Reach 27R: Inflow= 35.15 cfs 6.443 af
Length= 360.0' Max Vel= 12.2 fps Capacity= 33.55 cfs Outflow= 35.15 cfs 6.440 af

Reach 29R: Inflow= 304.91 cfs 49.634 af
Length= 1,062.0' Max Vel= 17.9 fps Capacity= 308.18 cfs Outflow= 304.01 cfs 49.578 af

Reach 30R: Inflow= 54.02 cfs 8.270 af
Length= 333.0' Max Vel= 13.8 fps Capacity= 94.33 cfs Outflow= 53.95 cfs 8.266 af

Reach 34R: Inflow= 39.36 cfs 6.300 af
Length= 500.0' Max Vel= 18.5 fps Capacity= 53.05 cfs Outflow= 39.34 cfs 6.297 af

Reach 40R: CHANNEL Inflow= 467.93 cfs 85.291 af
Length= 820.0' Max Vel= 7.2 fps Capacity= 539.62 cfs Outflow= 466.23 cfs 85.095 af

Reach 41R: SWALE Inflow= 38.56 cfs 6.785 af
Length= 890.0' Max Vel= 3.8 fps Capacity= 570.88 cfs Outflow= 38.32 cfs 6.751 af

Reach 42R: SWALE Inflow= 129.19 cfs 29.009 af
Length= 350.0' Max Vel= 5.0 fps Capacity= 1,142.31 cfs Outflow= 128.98 cfs 28.962 af

Reach 43R: Inflow= 110.46 cfs 14.980 af
Length= 255.0' Max Vel= 28.5 fps Capacity= 296.25 cfs Outflow= 110.30 cfs 14.977 af

Reach 44R: Inflow= 19.80 cfs 2.535 af
Length= 467.0' Max Vel= 5.3 fps Capacity= 36.45 cfs Outflow= 19.69 cfs 2.530 af

Reach 45R: Inflow= 0.00 cfs 0.000 af
Length= 126.0' Max Vel= 0.0 fps Capacity= 34.38 cfs Outflow= 0.00 cfs 0.000 af

Reach 46R: Inflow= 0.00 cfs 0.000 af
Length= 377.0' Max Vel= 0.0 fps Capacity= 40.58 cfs Outflow= 0.00 cfs 0.000 af

Reach 47R:
Length= 200.0' Max Vel= 0.0 fps Capacity= 14.00 cfs Outflow= 0.00 cfs 0.000 af

Reach 111x: (new node) Inflow= 78.27 cfs 11.437 af
Length= 1,426.0' Max Vel= 14.8 fps Capacity= 94.33 cfs Outflow= 75.02 cfs 11.417 af

Reach 113R: (new node) Inflow= 28.23 cfs 2.104 af
Length= 416.0' Max Vel= 15.2 fps Capacity= 45.24 cfs Outflow= 27.58 cfs 2.103 af

Reach 118R: Inflow= 19.13 cfs 1.705 af
Length= 400.0' Max Vel= 11.1 fps Capacity= 17.16 cfs Outflow= 17.41 cfs 1.703 af

Reach 119W: Inflow= 27.37 cfs 3.018 af
Length= 461.0' Max Vel= 10.1 fps Capacity= 27.72 cfs Outflow= 27.23 cfs 3.015 af

Reach 121W: (new node) Inflow= 66.77 cfs 11.745 af
Length= 312.0' Max Vel= 21.6 fps Capacity= 160.20 cfs Outflow= 66.72 cfs 11.741 af

Reach 122R: Inflow= 17.62 cfs 1.559 af
Length= 1,462.0' Max Vel= 2.8 fps Capacity= 263.47 cfs Outflow= 15.18 cfs 1.534 af

Reach 123R: (new node) Inflow= 36.77 cfs 4.133 af
Length= 500.0' Max Vel= 13.6 fps Capacity= 64.85 cfs Outflow= 36.56 cfs 4.129 af

Reach 124R: (new node) Inflow= 51.06 cfs 7.835 af
Length= 380.0' Max Vel= 10.4 fps Capacity= 66.70 cfs Outflow= 51.01 cfs 7.829 af

Reach 130W: (new node) Inflow= 57.29 cfs 10.114 af
Length= 511.0' Max Vel= 16.6 fps Capacity= 117.99 cfs Outflow= 57.24 cfs 10.108 af

Reach 134W: (new node) Inflow= 38.74 cfs 6.090 af
Length= 1,000.0' Max Vel= 18.3 fps Capacity= 52.57 cfs Outflow= 38.62 cfs 6.083 af

Reach 136R: (new node) Inflow= 22.38 cfs 3.888 af
Length= 616.0' Max Vel= 16.2 fps Capacity= 53.05 cfs Outflow= 22.36 cfs 3.885 af

Reach 221R: (new node) Inflow= 2.76 cfs 0.617 af
Length= 520.0' Max Vel= 11.3 fps Capacity= 10.60 cfs Outflow= 2.76 cfs 0.616 af

Reach 222W: (new node) Inflow= 2.84 cfs 0.717 af
Length= 900.0' Max Vel= 9.6 fps Capacity= 15.56 cfs Outflow= 2.83 cfs 0.715 af

Reach 225W: (new node) Inflow= 26.57 cfs 3.583 af
Length= 85.0' Max Vel= 11.4 fps Capacity= 31.99 cfs Outflow= 26.55 cfs 3.583 af

Reach 280R: Inflow= 61.53 cfs 15.319 af
Length= 200.0' Max Vel= 2.6 fps Capacity= 559.18 cfs Outflow= 61.45 cfs 15.281 af

Reach 313R: (new node) Inflow= 94.99 cfs 12.453 af
Length= 350.0' Max Vel= 23.2 fps Capacity= 156.42 cfs Outflow= 94.82 cfs 12.449 af

Reach 320R: (new node) Inflow= 67.75 cfs 9.256 af
Length= 503.0' Max Vel= 14.5 fps Capacity= 94.33 cfs Outflow= 67.65 cfs 9.249 af

Reach 334R: (new node) Inflow= 54.07 cfs 8.275 af
Length= 500.0' Max Vel= 19.2 fps Capacity= 53.05 cfs Outflow= 54.02 cfs 8.270 af

Reach 380R: Inflow= 17.51 cfs 3.600 af
Length= 1,090.0' Max Vel= 1.8 fps Capacity= 559.18 cfs Outflow= 17.16 cfs 3.542 af

Reach 523R: Inflow= 14.84 cfs 1.414 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 5.80 cfs 1.412 af

Reach 524R: Inflow= 20.09 cfs 2.574 af
Length= 80.0' Max Vel= 5.1 fps Capacity= 3.49 cfs Outflow= 3.49 cfs 2.573 af

Reach 525R: Inflow= 3.49 cfs 2.573 af
Length= 300.0' Max Vel= 3.3 fps Capacity= 11.72 cfs Outflow= 3.49 cfs 2.570 af

Reach 526R: Inflow= 3.49 cfs 2.570 af
Length= 550.0' Max Vel= 2.9 fps Capacity= 18.31 cfs Outflow= 3.49 cfs 2.563 af

Reach 528R: Inflow= 3.49 cfs 2.563 af
Length= 1,330.0' Max Vel= 2.8 fps Capacity= 29.20 cfs Outflow= 3.49 cfs 2.546 af

Reach DP#1: (new node) Inflow= 556.55 cfs 98.840 af
Outflow= 556.55 cfs 98.840 af

Reach DP#2: DESIGN POINT #2 Inflow= 61.45 cfs 15.281 af
Outflow= 61.45 cfs 15.281 af

Pond 1P: EXISTING POND Peak Storage= 139,420 cf Inflow= 526.76 cfs 92.674 af
Primary= 512.41 cfs 92.424 af Outflow= 512.41 cfs 92.424 af

Pond 2x: (new node) Peak Storage= 383,535 cf Inflow= 124.63 cfs 17.724 af
Primary= 45.23 cfs 14.032 af Outflow= 45.23 cfs 14.032 af

Pond 3P: Peak Storage= 6.194 af Inflow= 86.05 cfs 17.820 af
Primary= 61.53 cfs 15.319 af Outflow= 61.53 cfs 15.319 af

Pond 4P: (new node) Peak Storage= 102,742 cf Inflow= 67.36 cfs 11.458 af
Primary= 53.78 cfs 10.753 af Outflow= 53.78 cfs 10.753 af

Pond 5P: det pond Peak Storage= 252,897 cf Inflow= 139.32 cfs 21.635 af
Primary= 112.31 cfs 19.974 af Outflow= 112.31 cfs 19.974 af

Pond 7P: P-LOT DET. POND Peak Storage= 44,961 cf Inflow= 34.06 cfs 3.164 af
Primary= 16.02 cfs 2.993 af Outflow= 16.02 cfs 2.993 af

Pond 8P: (new node) Peak Storage= 46,873 cf Inflow= 42.02 cfs 3.282 af
Primary= 16.30 cfs 3.114 af Outflow= 16.30 cfs 3.114 af

Pond 9P: (new node) Peak Storage= 47,163 cf Inflow= 42.82 cfs 3.276 af
Primary= 16.30 cfs 3.107 af Outflow= 16.30 cfs 3.107 af

Pond 10P: P-LOT SUBSURFACE DET. POND Peak Storage= 40,829 cf Inflow= 39.03 cfs 3.004 af
Primary= 16.22 cfs 2.862 af Outflow= 16.22 cfs 2.862 af

Pond 11P: P-LOT SUBSURFACE DET. POND Peak Storage= 38,818 cf Inflow= 34.33 cfs 3.054 af
Primary= 17.21 cfs 2.921 af Outflow= 17.21 cfs 2.921 af

Pond 12C: P-LOT SUBSURFACE POND Peak Storage= 26,377 cf Inflow= 16.86 cfs 1.908 af
Primary= 9.39 cfs 1.793 af Outflow= 9.39 cfs 1.793 af

Pond 13P: SHARED P-LOT SUBSURFACE DET. POND Peak Storage= 53,517 cf Inflow= 54.82 cfs 4.028 af
Primary= 21.78 cfs 3.863 af Outflow= 21.78 cfs 3.863 af

Pond 14P: P-LOT SUBSURFACE DET.POND Peak Storage= 40,288 cf Inflow= 40.86 cfs 2.868 af
Primary= 16.11 cfs 2.723 af Outflow= 16.11 cfs 2.723 af

Pond 15P: SUB-SURFACE POND Peak Storage= 25,488 cf Inflow= 33.39 cfs 2.501 af
Primary= 18.88 cfs 2.415 af Outflow= 18.88 cfs 2.415 af

Pond 16P: SUBSURFACE STORAGE POND PARKING LOT Peak Storage= 10,649 cf Inflow= 9.65 cfs 0.659 af
Primary= 2.76 cfs 0.617 af Outflow= 2.76 cfs 0.617 af

Pond 17P: Peak Storage= 19,696 cf Inflow= 28.15 cfs 2.035 af
Primary= 15.86 cfs 1.978 af Outflow= 15.86 cfs 1.978 af

Pond 18P: Peak Storage= 54,984 cf Inflow= 49.10 cfs 4.070 af
Primary= 22.38 cfs 3.888 af Outflow= 22.38 cfs 3.888 af

Pond 19x: (new node) Peak Storage= 24,500 cf Inflow= 34.79 cfs 2.601 af
Primary= 19.80 cfs 2.535 af Outflow= 19.80 cfs 2.535 af

Pond 20P: (new node) Peak Storage= 49,803 cf Inflow= 36.80 cfs 3.878 af
Primary= 20.16 cfs 3.706 af Outflow= 20.16 cfs 3.706 af

Pond 22p: p-lot subsurface det. pond Peak Storage= 44,992 cf Inflow= 43.71 cfs 3.214 af
Primary= 18.58 cfs 3.048 af Outflow= 18.58 cfs 3.048 af

Pond 23C: p-lot subsurface det. pond Peak Storage= 17,061 cf Inflow= 9.77 cfs 0.829 af
Primary= 2.84 cfs 0.717 af Outflow= 2.84 cfs 0.717 af

Pond 24C: p-lot subsurface det. pond
Peak Storage= 17,555 cf Inflow= 24.14 cfs 1.693 af
Primary= 13.42 cfs 1.637 af Outflow= 13.42 cfs 1.637 af

Pond 25w: SUB-SURFACE PARKING LOT POND
Peak Storage= 79,815 cf Inflow= 63.57 cfs 5.023 af
Primary= 21.65 cfs 4.736 af Outflow= 21.65 cfs 4.736 af

Pond 311P: LSI POND
Peak Storage= 1.056 af Inflow= 68.57 cfs 7.420 af
Primary= 60.62 cfs 7.270 af Outflow= 60.62 cfs 7.270 af

Runoff Area = 483.310 ac Volume = 176.606 af Average Depth = 4.38"

Subcatchment 1S: AREA NEAR POND

Runoff = 64.87 cfs @ 12.40 hrs, Volume= 7.579 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
9.810	77	Woods, Good, HSG D
2.940	98	Paved parking & roofs
9.700	80	Pasture/grassland/range, Good, HSG D
22.450	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.0150	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
13.0	670	0.0150	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	820	0.0150	7.9	570.88	**Trap/Vee/Rect Channel Flow,** Bot.W=6.00' D=4.00' Z= 3.0 '/' n= 0.040
29.2	1,640	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 143.93 cfs @ 12.44 hrs, Volume= 18.718 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 45.55 cfs @ 12.65 hrs, Volume= 6.598 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 14.45 cfs @ 12.14 hrs, Volume= 1.162 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE

Runoff = 34.06 cfs @ 12.19 hrs, Volume= 3.164 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
2.010	74	>75% Grass cover, Good, HSG C
5.380	98	Paved parking & roofs
7.390	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	190	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	20	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	105	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	320	0.0590	3.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.8	370	0.0216	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.0	520	0.0135	1.7		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.5	1,675	Total			

Subcatchment 8c: CONVENTION CENTER

Runoff = 63.57 cfs @ 12.11 hrs, Volume= 5.023 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
9.070	98	Paved parking & roofs
2.200	74	>75% Grass cover, Good, HSG C
11.270	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.5	50	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.6	970	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	1,170	Total			

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING

Runoff = 39.03 cfs @ 12.10 hrs, Volume= 3.004 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
5.420	98	Paved parking & roofs
1.320	74	>75% Grass cover, Good, HSG C
6.740	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	582	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	904	Total			

Subcatchment 10S: area near trailer road

Runoff = 24.94 cfs @ 12.68 hrs, Volume= 3.776 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
7.420	77	Woods, Good, HSG D
3.170	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
11.560	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.1	150	0.0159	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
9.3	353	0.0159	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.5	713	0.0112	1.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
50.3	1,781	Total			

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE

Runoff = 32.58 cfs @ 12.05 hrs, Volume= 2.188 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.650	98	Paved parking & roofs
1.350	74	Pasture/grassland/range, Good, HSG C
5.000	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.7	300	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	80	0.3300	23.4	421.71	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.00' Z= 3.0 '/' n= 0.040
3.4	530	Total			

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI

Runoff = 34.79 cfs @ 12.11 hrs, Volume= 2.601 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
2.940	74	Pasture/grassland/range, Good, HSG C
0.470	70	Woods, Good, HSG C
3.360	98	Paved parking & roofs
6.770	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0800	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.9	350	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	680	0.0210	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.0	1,180	Total			

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 28.23 cfs @ 12.10 hrs, Volume= 2.104 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.300	98	Paved parking & roofs
1.710	74	>75% Grass cover, Good, HSG C
5.010	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.9	350	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	65	0.3300	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	306	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	871	Total			

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS

Runoff = 34.33 cfs @ 12.19 hrs, Volume= 3.054 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.870	74	Pasture/grassland/range, Good, HSG C
4.090	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	150	0.0050	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.9	338	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	130	0.0462	4.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.8	585	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.0	1,203	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)

Runoff = 42.82 cfs @ 12.10 hrs, Volume= 3.276 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.500	74	Pasture/grassland/range, Good, HSG C
5.850	98	Paved parking & roofs
7.350	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	84	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	168	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	100	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	380	0.0950	4.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	88	0.0680	18.8	58.99	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
7.2	970	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL

Runoff = 42.02 cfs @ 12.11 hrs, Volume= 3.282 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.150	74	>75% Grass cover, Good, HSG C
6.080	98	Paved parking & roofs
7.230	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	115	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	35	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	115	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	0.0430	3.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	35	0.0200	8.4	14.86	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.6	947	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 14.84 cfs @ 12.23 hrs, Volume= 1.414 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Area (ac)	CN	Description
1.150	74	>75% Grass cover, Good, HSG C
6.080	98	Paved parking & roofs
7.230	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	115	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	35	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	115	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	0.0430	3.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	35	0.0200	8.4	14.86	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.6	947	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 14.84 cfs @ 12.23 hrs, Volume= 1.414 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 43.71 cfs @ 12.26 hrs, Volume= 4.294 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 22.70 cfs @ 12.60 hrs, Volume= 3.268 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD

Runoff = 3.95 cfs @ 12.09 hrs, Volume= 0.282 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
0.280	74	>75% Grass cover, Good, HSG C
0.420	98	Paved parking & roofs
0.700	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	150	0.1867	0.5		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.6	200	0.0833	5.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	350	Total			

Subcatchment 21L: AREA NEAR SERVICE STATION

Runoff = 15.22 cfs @ 12.06 hrs, Volume= 0.983 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.560	74	Pasture/grassland/range, Good, HSG C
1.120	98	Paved parking & roofs
2.680	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0722	2.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	127	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8	653	Total			

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE

Runoff = 9.77 cfs @ 12.16 hrs, Volume= 0.829 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
0.830	74	Pasture/grassland/range, Good, HSG C
0.130	70	Woods, Good, HSG C
1.150	98	Paved parking & roofs
2.110	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	150	0.0649	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.9	312	0.0649	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	275	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.1	737	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 31.08 cfs @ 12.18 hrs, Volume= 2.598 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
2.180	74	Pasture/grassland/range, Good, HSG C
7.310	70	Woods, Good, HSG C
0.370	98	PAVED
9.860	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: RESEARCH AND DEVELOPMENT

Runoff = 36.80 cfs @ 12.29 hrs, Volume= 3.878 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
2.550	74	Pasture/grassland/range, Good, HSG C
1.990	70	Woods, Good, HSG C
5.590	98	Paved parking & roofs
10.130	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.1116	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	242	0.1116	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	883	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.8	1,275	Total			

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES

Runoff = 26.57 cfs @ 12.54 hrs, Volume= 3.583 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.510	70	Woods, Good, HSG C
3.140	98	Paved parking & roofs
10.650	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.4	150	0.0200	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.3	500	0.0700	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	280	0.0930	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	24	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	215	0.1300	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
39.9	1,169	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 17.29 cfs @ 13.13 hrs, Volume= 3.525 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
9.790	70	Woods, Good, HSG C
0.060	87	Dirt roads, HSG C
3.520	74	Pasture/grassland/range, Good, HSG C
0.380	98	Paved parking & roofs
13.750	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	150	0.0800	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	410	0.0719	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
62.0	1,315	0.0050	0.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.5	470	0.0139	5.3	210.39	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
84.9	2,345	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 17.51 cfs @ 13.16 hrs, Volume= 3.600 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
9.040	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
0.960	98	Paved parking & roofs
13.620	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.4	150	0.0133	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
15.1	1,015	0.0500	1.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.2	358	0.0168	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.4	1,105	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.6	275	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
85.7	2,903	Total			

Subcatchment 29S: CORPORATE RESIDENCE

Runoff = 67.36 cfs @ 12.78 hrs, Volume= 11.458 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
5.940	74	Pasture/grassland/range, Good, HSG C
7.680	70	Woods, Good, HSG C
16.030	98	Paved parking & roofs
0.620	87	Dirt roads, HSG C
30.270	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.5	150	0.0100	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.5	370	0.0270	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.6	235	0.0940	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	175	0.2170	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	1,010	0.0180	2.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	680	0.0350	3.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	220	0.1640	6.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.9	200	0.0650	3.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
59.6	3,040	Total			

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL

Runoff = 43.71 cfs @ 12.10 hrs, Volume= 3.214 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.370	74	Pasture/grassland/range, Good, HSG C
4.620	98	Paved parking & roofs
7.990	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	290	0.0414	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	636	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	1,452	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 24.03 cfs @ 12.28 hrs, Volume= 2.409 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 19.68 cfs @ 12.53 hrs, Volume= 2.578 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 67.95 cfs @ 12.39 hrs, Volume= 8.079 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 16.86 cfs @ 12.27 hrs, Volume= 1.908 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.960	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.1	575	0.0133	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	533	0.0719	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.0	1,258	Total			

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND

Runoff = 60.23 cfs @ 12.27 hrs, Volume= 6.307 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
10.040	98	Paved parking & roofs
5.020	74	>75% Grass cover, Good, HSG C
15.060	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	150	0.1280	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	100	0.1280	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	1,020	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
20.3	1,270	Total			

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS

Runoff = 27.97 cfs @ 12.09 hrs, Volume= 2.073 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.520	98	Paved parking & roofs
1.220	74	Pasture/grassland/range, Good, HSG C
4.740	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.7	450	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	86	0.0233	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	686	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 19.13 cfs @ 12.18 hrs, Volume= 1.639 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 50.59 cfs @ 12.20 hrs, Volume= 4.444 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119L:

Runoff = 27.37 cfs @ 12.33 hrs, Volume= 3.018 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL

Runoff = 24.14 cfs @ 12.07 hrs, Volume= 1.693 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.350	74	>75% Grass cover, Good, HSG C
2.680	98	Paved parking & roofs
4.030	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0278	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.3	67	0.0278	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	280	0.0786	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	529	0.0340	3.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.9	1,026	Total			

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL

Runoff = 17.62 cfs @ 12.22 hrs, Volume= 1.559 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.340	74	Pasture/grassland/range, Good, HSG C
0.200	87	Dirt roads, HSG C
4.230	70	Woods, Good, HSG C
0.150	98	Paved parking & roofs
5.920	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.1456	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.5	166	0.1456	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	625	0.0100	9.5	56.73	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 4.0 '/' n= 0.011
15.4	941	Total			

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD

Runoff = 49.10 cfs @ 12.17 hrs, Volume= 4.070 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
4.710	74	Pasture/grassland/range, Good, HSG C
4.000	70	Woods, Good, HSG C
3.600	98	Paved parking & roofs
12.310	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	80	0.0750	2.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.9	70	0.0857	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.2	200	0.1600	2.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	500	0.0100	1.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.3	250	0.1600	15.8	252.16	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	450	0.0578	9.5	151.56	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
12.4	1,550	Total			

Subcatchment 200S: area along 207

Runoff = 20.18 cfs @ 12.53 hrs, Volume= 2.639 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
0.310	87	Dirt roads, HSG C
4.900	70	Woods, Good, HSG C
3.110	74	Pasture/grassland/range, Good, HSG C
0.920	98	Paved parking & roofs
9.240	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0273	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.6	326	0.0273	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	1,680	0.0214	5.8	92.22	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
1.8	650	0.0231	6.0	95.81	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
38.4	2,806	Total			

Subcatchment 213S: OFFICE ON AVENUE OF AMERICAS

Runoff = 26.88 cfs @ 12.08 hrs, Volume= 1.955 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.170	98	Paved parking & roofs
1.390	74	>75% Grass cover, Good, HSG C
4.560	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.2	390	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	88	0.0227	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.8	628	Total			

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET

Runoff = 19.13 cfs @ 12.21 hrs, Volume= 1.705 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.500	98	Paved parking & roofs
2.090	74	>75% Grass cover, Good, HSG C
1.570	70	Woods, Good, HSG C
5.160	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.1465	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.8	205	0.1465	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	190	0.0158	5.0	79.24	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
15.2	545	Total			

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL

Runoff = 9.65 cfs @ 12.05 hrs, Volume= 0.659 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.180	98	Paved parking & roofs
0.270	74	>75% Grass cover, Good, HSG C
1.450	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.3	35	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	252	0.0397	4.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	437	Total			

Subcatchment 230S: EDUCATION AND HOTELS AND REST

Runoff = 40.86 cfs @ 12.08 hrs, Volume= 2.868 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.920	98	Paved parking & roofs
3.370	74	>75% Grass cover, Good, HSG C
7.290	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.5	740	0.0568	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	446	0.0807	5.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	1,336	Total			

Subcatchment 311S: LSI

Runoff = 68.57 cfs @ 12.30 hrs, Volume= 7.420 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
11.570	98	Paved parking & roofs
6.540	74	>75% Grass cover, Good, HSG C
18.110	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	150	0.0300	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
3.4	250	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	1,180	0.0150	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.3	1,580	Total			

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD

Runoff = 33.99 cfs @ 12.10 hrs, Volume= 2.522 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.710	98	Paved parking & roofs
2.560	74	>75% Grass cover, Good, HSG C
6.270	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	136	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.8	493	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	375	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	1,154	Total			

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE

Runoff = 29.78 cfs @ 12.05 hrs, Volume= 1.990 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.190	98	Paved parking & roofs
1.450	74	>75% Grass cover, Good, HSG C
4.640	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	150	0.0400	2.1		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	550	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	700	Total			

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 28.15 cfs @ 12.09 hrs, Volume= 2.035 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
1.850	74	>75% Grass cover, Good, HSG C
3.100	98	Paved parking & roofs
4.950	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	394	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	189	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	170	0.3333	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	903	Total			

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 17.14 cfs @ 12.46 hrs, Volume= 2.080 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.220	74	Pasture/grassland/range, Good, HSG C
7.950	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.7	200	0.0200	0.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.7	700	0.2500	2.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.3	1,500	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
33.0	2,550	Total			

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE

Runoff = 33.39 cfs @ 12.11 hrs, Volume= 2.501 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

Area (ac)	CN	Description
3.570	98	Paved parking & roofs
2.650	74	>75% Grass cover, Good, HSG C
6.220	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	150	0.0067	1.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	70	0.0067	1.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	510	0.0275	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	170	0.0706	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	465	0.0645	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	1,365	Total			

Reach 1R: (new node)

Inflow = 60.62 cfs @ 12.41 hrs, Volume= 7.270 af
Outflow = 60.48 cfs @ 12.43 hrs, Volume= 7.265 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.5 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.94'
Capacity at bank full= 80.79 cfs
36.0" Diameter Pipe n= 0.012 Length= 416.0' Slope= 0.0125 '/'

Reach 2R: (new node)

Inflow	=	88.81 cfs @	12.45 hrs,	Volume=	17.258 af
Outflow	=	88.75 cfs @	12.47 hrs,	Volume=	17.242 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.6 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 6.7 fps, Avg. Travel Time= 1.7 min

Peak Depth= 2.26'
Capacity at bank full= 118.90 cfs
42.0" Diameter Pipe n= 0.011 Length= 670.0' Slope= 0.0100 '/'

Reach 3R: DP3

Inflow	=	304.24 cfs @	12.54 hrs,	Volume=	50.313 af
Outflow	=	304.17 cfs @	12.54 hrs,	Volume=	50.304 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.5 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 0.3 min

Peak Depth= 2.04'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 4R: (new node)

Inflow	=	67.26 cfs @	12.42 hrs,	Volume=	12.539 af
Outflow	=	67.19 cfs @	12.46 hrs,	Volume=	12.523 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.7 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 2.2 min

Peak Depth= 2.37'
Capacity at bank full= 84.14 cfs
42.0" Diameter Pipe n= 0.011 Length= 641.0' Slope= 0.0050 '/'

Reach 5R:

Inflow	=	45.55 cfs @	12.65 hrs,	Volume=	6.598 af
Outflow	=	45.41 cfs @	12.69 hrs,	Volume=	6.589 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.4 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.94'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow	=	67.87 cfs @	12.47 hrs,	Volume=	10.883 af
Outflow	=	67.80 cfs @	12.53 hrs,	Volume=	10.852 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.4 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 4.8 min

Peak Depth= 2.54'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow	=	102.51 cfs @	12.31 hrs,	Volume=	15.296 af
Outflow	=	102.12 cfs @	12.33 hrs,	Volume=	15.282 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 1.6 min

Peak Depth= 2.10'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow	=	169.33 cfs @	12.36 hrs,	Volume=	23.361 af
Outflow	=	169.29 cfs @	12.37 hrs,	Volume=	23.359 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.9 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.5 fps, Avg. Travel Time= 0.1 min

Peak Depth= 3.27'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow = 169.29 cfs @ 12.37 hrs, Volume= 23.359 af
Outflow = 168.55 cfs @ 12.40 hrs, Volume= 23.329 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.4 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 2.4 min

Peak Depth= 3.26'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow = 285.11 cfs @ 12.51 hrs, Volume= 47.792 af
Outflow = 284.57 cfs @ 12.54 hrs, Volume= 47.735 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 2.0 min

Peak Depth= 3.81'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow = 50.40 cfs @ 12.60 hrs, Volume= 6.890 af
Outflow = 50.45 cfs @ 12.58 hrs, Volume= 6.881 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 4.6 fps, Avg. Travel Time= 2.4 min

Peak Depth= 1.51'
Capacity at bank full= 55.41 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R: (new node)

Inflow = 16.30 cfs @ 12.38 hrs, Volume= 3.112 af
Outflow = 16.29 cfs @ 12.45 hrs, Volume= 3.106 af, Atten= 0%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.8 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 3.3 min

Peak Depth= 1.68'
Capacity at bank full= 16.00 cfs
24.0" Diameter Pipe n= 0.013 Length= 612.0' Slope= 0.0050 '/'

Reach 12W:

Inflow	=	92.42 cfs @	12.41 hrs, Volume=	14.756 af	
Outflow	=	92.37 cfs @	12.42 hrs, Volume=	14.753 af,	Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 22.0 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 10.3 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.72'
Capacity at bank full= 147.66 cfs
36.0" Diameter Pipe n= 0.013 Length= 213.0' Slope= 0.0490 '/'

Reach 15R:

Inflow	=	39.26 cfs @	12.20 hrs, Volume=	3.622 af	
Outflow	=	30.08 cfs @	12.11 hrs, Volume=	3.622 af,	Atten= 23%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.8 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.5 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	22.58 cfs @	12.17 hrs, Volume=	1.920 af	
Outflow	=	22.11 cfs @	12.20 hrs, Volume=	1.919 af,	Atten= 2%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.2 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.3 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.62'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	3.95 cfs @	12.09 hrs, Volume=	0.282 af	
Outflow	=	3.70 cfs @	12.13 hrs, Volume=	0.281 af,	Atten= 6%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 3.3 min

Peak Depth= 0.77'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 21R:

Inflow	=	18.86 cfs @	12.31 hrs, Volume=	3.340 af	
Outflow	=	18.85 cfs @	12.33 hrs, Volume=	3.337 af,	Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.8 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 7.1 fps, Avg. Travel Time= 1.5 min

Peak Depth= 1.02'
Capacity at bank full= 23.49 cfs
18.0" Diameter Pipe n= 0.013 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow	=	16.30 cfs @	12.36 hrs, Volume=	3.114 af	
Outflow	=	16.30 cfs @	12.38 hrs, Volume=	3.112 af,	Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.2 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.01'
Capacity at bank full= 31.99 cfs
24.0" Diameter Pipe n= 0.013 Length= 396.0' Slope= 0.0200 '/'

Reach 27R:

Inflow	=	35.15 cfs @	12.34 hrs, Volume=	6.443 af	
Outflow	=	35.15 cfs @	12.36 hrs, Volume=	6.440 af,	Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.2 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 6.3 fps, Avg. Travel Time= 1.0 min

Peak Depth= 1.74'
Capacity at bank full= 33.55 cfs
24.0" Diameter Pipe n= 0.013 Length= 360.0' Slope= 0.0220 '/'

Reach 29R:

Inflow	=	304.91 cfs @	12.43 hrs, Volume=	49.634 af	
Outflow	=	304.01 cfs @	12.46 hrs, Volume=	49.578 af,	Atten= 0%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.9 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 9.1 fps, Avg. Travel Time= 1.9 min

Peak Depth= 4.05'
Capacity at bank full= 308.18 cfs
60.0" Diameter Pipe n= 0.013 Length= 1,062.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	54.02 cfs @	12.35 hrs, Volume=	8.270 af	
Outflow	=	53.95 cfs @	12.36 hrs, Volume=	8.266 af,	Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.1 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.63'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 333.0' Slope= 0.0200 '/'

Reach 34R:

Inflow	=	39.36 cfs @	12.36 hrs, Volume=	6.300 af	
Outflow	=	39.34 cfs @	12.37 hrs, Volume=	6.297 af,	Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.5 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 8.4 fps, Avg. Travel Time= 1.0 min

Peak Depth= 1.28'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0550 '/'

Reach 40R: CHANNEL

Inflow	=	467.93 cfs @	12.46 hrs, Volume=	85.291 af	
Outflow	=	466.23 cfs @	12.51 hrs, Volume=	85.095 af,	Atten= 0%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.2 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 3.6 fps, Avg. Travel Time= 3.8 min

Peak Depth= 3.75'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 38.56 cfs @ 12.39 hrs, Volume= 6.785 af
Outflow = 38.32 cfs @ 12.50 hrs, Volume= 6.751 af, Atten= 1%, Lag= 7.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.8 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 8.8 min

Peak Depth= 1.08'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 129.19 cfs @ 12.22 hrs, Volume= 29.009 af
Outflow = 128.98 cfs @ 12.26 hrs, Volume= 28.962 af, Atten= 0%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 2.4 min

Peak Depth= 1.50'
Capacity at bank full= 1,142.31 cfs
8.00' x 4.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 110.46 cfs @ 12.16 hrs, Volume= 14.980 af
Outflow = 110.30 cfs @ 12.17 hrs, Volume= 14.977 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 28.5 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 12.4 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.48'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 19.80 cfs @ 12.26 hrs, Volume= 2.535 af
Outflow = 19.69 cfs @ 12.31 hrs, Volume= 2.530 af, Atten= 1%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.3 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 3.5 min

Peak Depth= 1.57'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Outflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 111x: (new node)

Inflow	=	78.27 cfs @	12.07 hrs, Volume=	11.437 af	
Outflow	=	75.02 cfs @	12.44 hrs, Volume=	11.417 af,	Atten= 4%, Lag= 22.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.8 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 7.1 fps, Avg. Travel Time= 3.3 min

Peak Depth= 2.03'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 1,426.0' Slope= 0.0200 '/'

Reach 113R: (new node)

Inflow	=	28.23 cfs @	12.10 hrs,	Volume=	2.104 af
Outflow	=	27.58 cfs @	12.11 hrs,	Volume=	2.103 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.2 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.9 fps, Avg. Travel Time= 1.2 min

Peak Depth= 1.14'
Capacity at bank full= 45.24 cfs
24.0" Diameter Pipe n= 0.013 Length= 416.0' Slope= 0.0400 '/'

Reach 118R:

Inflow	=	19.13 cfs @	12.21 hrs,	Volume=	1.705 af
Outflow	=	17.41 cfs @	12.35 hrs,	Volume=	1.703 af, Atten= 9%, Lag= 8.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.1 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.9 fps, Avg. Travel Time= 1.4 min

Peak Depth= 1.50'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119W:

Inflow	=	27.37 cfs @	12.33 hrs,	Volume=	3.018 af
Outflow	=	27.23 cfs @	12.36 hrs,	Volume=	3.015 af, Atten= 1%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.4 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.62'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 121W: (new node)

Inflow	=	66.77 cfs @	12.46 hrs,	Volume=	11.745 af
Outflow	=	66.72 cfs @	12.47 hrs,	Volume=	11.741 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 21.6 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 10.1 fps, Avg. Travel Time= 0.5 min

Peak Depth= 1.35'
Capacity at bank full= 160.20 cfs
36.0" Diameter Pipe n= 0.013 Length= 312.0' Slope= 0.0577 '/'

Reach 122R:

Inflow	=	17.62 cfs @	12.22 hrs, Volume=	1.559 af
Outflow	=	15.18 cfs @	12.46 hrs, Volume=	1.534 af, Atten= 14%, Lag= 14.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 8.6 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 23.0 min

Peak Depth= 0.44'
Capacity at bank full= 263.47 cfs
10.00' x 2.00' deep channel, n= 0.040 Length= 1,462.0' Slope= 0.0218 '/'
Side Slope Z-value= 5.0 '/'

Reach 123R: (new node)

Inflow	=	36.77 cfs @	12.21 hrs, Volume=	4.133 af
Outflow	=	36.56 cfs @	12.22 hrs, Volume=	4.129 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.6 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 6.3 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.35'
Capacity at bank full= 64.85 cfs
30.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0250 '/'

Reach 124R: (new node)

Inflow	=	51.06 cfs @	12.42 hrs, Volume=	7.835 af
Outflow	=	51.01 cfs @	12.44 hrs, Volume=	7.829 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.4 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.6 fps, Avg. Travel Time= 1.4 min

Peak Depth= 1.97'
Capacity at bank full= 66.70 cfs
36.0" Diameter Pipe n= 0.013 Length= 380.0' Slope= 0.0100 '/'

Reach 130W: (new node)

Inflow = 57.29 cfs @ 12.50 hrs, Volume= 10.114 af
Outflow = 57.24 cfs @ 12.51 hrs, Volume= 10.108 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.6 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 7.8 fps, Avg. Travel Time= 1.1 min

Peak Depth= 1.47'
Capacity at bank full= 117.99 cfs
36.0" Diameter Pipe n= 0.013 Length= 511.0' Slope= 0.0313 '/'

Reach 134W: (new node)

Inflow = 38.74 cfs @ 12.55 hrs, Volume= 6.090 af
Outflow = 38.62 cfs @ 12.58 hrs, Volume= 6.083 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.3 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 8.5 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.28'
Capacity at bank full= 52.57 cfs
24.0" Diameter Pipe n= 0.013 Length= 1,000.0' Slope= 0.0540 '/'

Reach 136R: (new node)

Inflow = 22.38 cfs @ 12.46 hrs, Volume= 3.888 af
Outflow = 22.36 cfs @ 12.48 hrs, Volume= 3.885 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.2 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 7.7 fps, Avg. Travel Time= 1.3 min

Peak Depth= 0.91'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 616.0' Slope= 0.0550 '/'

Reach 221R: (new node)

Inflow = 2.76 cfs @ 12.35 hrs, Volume= 0.617 af
Outflow = 2.76 cfs @ 12.37 hrs, Volume= 0.616 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.3 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 5.8 fps, Avg. Travel Time= 1.5 min

Peak Depth= 0.35'
Capacity at bank full= 10.60 cfs
12.0" Diameter Pipe n= 0.013 Length= 520.0' Slope= 0.0885 '/'

Reach 222W: (new node)

Inflow	=	2.84 cfs @	12.58 hrs, Volume=	0.717 af	
Outflow	=	2.83 cfs @	12.62 hrs, Volume=	0.715 af,	Atten= 0%, Lag= 2.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.6 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 3.1 min

Peak Depth= 0.36'
Capacity at bank full= 15.56 cfs
15.0" Diameter Pipe n= 0.013 Length= 900.0' Slope= 0.0580 '/'

Reach 225W: (new node)

Inflow	=	26.57 cfs @	12.54 hrs, Volume=	3.583 af	
Outflow	=	26.55 cfs @	12.55 hrs, Volume=	3.583 af,	Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.4 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.3 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.39'
Capacity at bank full= 31.99 cfs
24.0" Diameter Pipe n= 0.013 Length= 85.0' Slope= 0.0200 '/'

Reach 280R:

Inflow	=	61.53 cfs @	13.81 hrs, Volume=	15.319 af	
Outflow	=	61.45 cfs @	13.85 hrs, Volume=	15.281 af,	Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.6 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 2.7 min

Peak Depth= 1.40'
Capacity at bank full= 559.18 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 200.0' Slope= 0.0050 '/'
Side Slope Z-value= 5.0 '/'

Reach 313R: (new node)

Inflow	=	94.99 cfs @	12.14 hrs, Volume=	12.453 af	
Outflow	=	94.82 cfs @	12.15 hrs, Volume=	12.449 af,	Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 23.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 10.3 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.69'
Capacity at bank full= 156.42 cfs
36.0" Diameter Pipe n= 0.013 Length= 350.0' Slope= 0.0550 '/'

Reach 320R: (new node)

Inflow	=	67.75 cfs @	12.39 hrs, Volume=	9.256 af
Outflow	=	67.65 cfs @	12.41 hrs, Volume=	9.249 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.5 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 6.6 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.88'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 503.0' Slope= 0.0200 '/'

Reach 334R: (new node)

Inflow	=	54.07 cfs @	12.33 hrs, Volume=	8.275 af
Outflow	=	54.02 cfs @	12.35 hrs, Volume=	8.270 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 19.2 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 9.1 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.68'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0550 '/'

Reach 380R:

Inflow	=	17.51 cfs @	13.16 hrs, Volume=	3.600 af
Outflow	=	17.16 cfs @	13.45 hrs, Volume=	3.542 af, Atten= 2%, Lag= 17.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.8 fps, Min. Travel Time= 10.2 min
Avg. Velocity = 0.9 fps, Avg. Travel Time= 20.2 min

Peak Depth= 0.71'
Capacity at bank full= 559.18 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 1,090.0' Slope= 0.0050 '/'
Side Slope Z-value= 5.0 '/'

Reach 523R:

Inflow	=	14.84 cfs @	12.23 hrs,	Volume=	1.414 af
Outflow	=	5.80 cfs @	12.04 hrs,	Volume=	1.412 af, Atten= 61%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 2.0 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 524R:

Inflow	=	20.09 cfs @	12.14 hrs,	Volume=	2.574 af
Outflow	=	3.49 cfs @	11.65 hrs,	Volume=	2.573 af, Atten= 83%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 525R:

Inflow	=	3.49 cfs @	11.65 hrs,	Volume=	2.573 af
Outflow	=	3.49 cfs @	11.70 hrs,	Volume=	2.570 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.3 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 2.0 min

Peak Depth= 0.75'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 526R:

Inflow	=	3.49 cfs @	11.70 hrs,	Volume=	2.570 af
Outflow	=	3.49 cfs @	12.85 hrs,	Volume=	2.563 af, Atten= 0%, Lag= 69.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 4.1 min

Peak Depth= 0.74'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 528R:

Inflow	=	3.49 cfs @	12.85 hrs, Volume=	2.563 af	
Outflow	=	3.49 cfs @	15.03 hrs, Volume=	2.546 af,	Atten= 0%, Lag= 131.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 10.4 min

Peak Depth= 0.70'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach DP#1: (new node)

Inflow	=	556.55 cfs @	12.59 hrs, Volume=	98.840 af	
Outflow	=	556.55 cfs @	12.59 hrs, Volume=	98.840 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow	=	61.45 cfs @	13.85 hrs, Volume=	15.281 af	
Outflow	=	61.45 cfs @	13.85 hrs, Volume=	15.281 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow	=	526.76 cfs @	12.49 hrs, Volume=	92.674 af	
Outflow	=	512.41 cfs @	12.58 hrs, Volume=	92.424 af,	Atten= 3%, Lag= 5.6 min
Primary	=	512.41 cfs @	12.58 hrs, Volume=	92.424 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 392.66' Storage= 139,420 cf
Plug-Flow detention time= 4.9 min calculated for 92.424 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Culvert
- 4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

Pond 2x: (new node)

Inflow	=	124.63 cfs @	12.37 hrs,	Volume=	17.724 af
Outflow	=	45.23 cfs @	12.95 hrs,	Volume=	14.032 af, Atten= 64%, Lag= 35.0 min
Primary	=	45.23 cfs @	12.95 hrs,	Volume=	14.032 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 7.10' Storage= 383,535 cf
Plug-Flow detention time= 155.5 min calculated for 14.032 af (79% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	54,014	0	0
8.00	54,014	432,112	432,112

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	2.00'	**30.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 1.75' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 3P:

Inflow	=	86.05 cfs @	13.20 hrs,	Volume=	17.820 af
Outflow	=	61.53 cfs @	13.81 hrs,	Volume=	15.319 af, Atten= 28%, Lag= 36.9 min
Primary	=	61.53 cfs @	13.81 hrs,	Volume=	15.319 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 5.40' Storage= 6.194 af
Plug-Flow detention time= 98.2 min calculated for 15.268 af (86% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
0.00	1.148	0.000	0.000
6.00	1.148	6.888	6.888

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= 0.99' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	5.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 4P: (new node)

Inflow	=	67.36 cfs @	12.78 hrs,	Volume=	11.458 af
Outflow	=	53.78 cfs @	13.11 hrs,	Volume=	10.753 af, Atten= 20%, Lag= 19.3 min
Primary	=	53.78 cfs @	13.11 hrs,	Volume=	10.753 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 5.14' Storage= 102,742 cf
Plug-Flow detention time= 54.8 min calculated for 10.717 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	19,994	0	0
4.00	19,994	79,976	79,976
6.00	19,994	39,988	119,964

Primary OutFlow (Free Discharge)
└─1=Culvert
└─2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -22.00' S= 0.1100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -21.00' S= 0.1100 '/' n= 0.013 Cc= 0.900

Pond 5P: det pond

Inflow	=	139.32 cfs @	12.46 hrs,	Volume=	21.635 af
Outflow	=	112.31 cfs @	12.71 hrs,	Volume=	19.974 af, Atten= 19%, Lag= 14.8 min
Primary	=	112.31 cfs @	12.71 hrs,	Volume=	19.974 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 5.62' Storage= 252,897 cf
Plug-Flow detention time= 72.4 min calculated for 19.974 af (92% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	44,997	0	0
6.00	44,997	269,982	269,982

Primary OutFlow (Free Discharge)
└─1=Culvert
└─2=Culvert
└─3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	1.00'	**42.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.50' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	0.00'	**12.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	4.50'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 7P: P-LOT DET. POND

Inflow	=	34.06 cfs @	12.19 hrs,	Volume=	3.164 af
Outflow	=	16.02 cfs @	12.49 hrs,	Volume=	2.993 af, Atten= 53%, Lag= 17.6 min
Primary	=	16.02 cfs @	12.49 hrs,	Volume=	2.993 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.55' Storage= 44,961 cf
Plug-Flow detention time= 73.0 min calculated for 2.993 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 8P: (new node)

Inflow	=	42.02 cfs @	12.11 hrs, Volume=	3.282 af
Outflow	=	16.30 cfs @	12.36 hrs, Volume=	3.114 af, Atten= 61%, Lag= 15.5 min
Primary	=	16.30 cfs @	12.36 hrs, Volume=	3.114 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.66' Storage= 46,873 cf
Plug-Flow detention time= 73.4 min calculated for 3.114 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,622	0	0
4.00	17,622	70,488	70,488

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 9P: (new node)

Inflow	=	42.82 cfs @	12.10 hrs, Volume=	3.276 af
Outflow	=	16.30 cfs @	12.36 hrs, Volume=	3.107 af, Atten= 62%, Lag= 15.5 min
Primary	=	16.30 cfs @	12.36 hrs, Volume=	3.107 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.67' Storage= 47,163 cf
Plug-Flow detention time= 73.0 min calculated for 3.097 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 10P: P-LOT SUBSURFACE DET. POND

Inflow	=	39.03 cfs @	12.10 hrs,	Volume=	3.004 af
Outflow	=	16.22 cfs @	12.33 hrs,	Volume=	2.862 af, Atten= 58%, Lag= 13.9 min
Primary	=	16.22 cfs @	12.33 hrs,	Volume=	2.862 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.60' Storage= 40,829 cf
Plug-Flow detention time= 67.6 min calculated for 2.862 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 11P: P-LOT SUBSURFACE DET. POND

Inflow	=	34.33 cfs @	12.19 hrs,	Volume=	3.054 af
Outflow	=	17.21 cfs @	12.46 hrs,	Volume=	2.921 af, Atten= 50%, Lag= 16.3 min
Primary	=	17.21 cfs @	12.46 hrs,	Volume=	2.921 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.47' Storage= 38,818 cf
Plug-Flow detention time= 56.8 min calculated for 2.912 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 560.0' long Culvert** Ke= 0.600 Outlet Invert= -5.60' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 12C: P-LOT SUBSURFACE POND

Inflow	=	16.86 cfs @	12.27 hrs,	Volume=	1.908 af
Outflow	=	9.39 cfs @	12.57 hrs,	Volume=	1.793 af, Atten= 44%, Lag= 17.8 min
Primary	=	9.39 cfs @	12.57 hrs,	Volume=	1.793 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.68' Storage= 26,377 cf
Plug-Flow detention time= 82.4 min calculated for 1.787 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 13P: SHARED P-LOT SUBSURFACE DET. POND

Inflow	=	54.82 cfs @	12.09 hrs,	Volume=	4.028 af
Outflow	=	21.78 cfs @	12.32 hrs,	Volume=	3.863 af, Atten= 60%, Lag= 13.7 min
Primary	=	21.78 cfs @	12.32 hrs,	Volume=	3.863 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.41' Storage= 53,517 cf
Plug-Flow detention time= 60.8 min calculated for 3.851 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 14P: P-LOT SUBSURFACE DET.POND

Inflow	=	40.86 cfs @	12.08 hrs, Volume=	2.868 af	
Outflow	=	16.11 cfs @	12.31 hrs, Volume=	2.723 af,	Atten= 61%, Lag= 13.8 min
Primary	=	16.11 cfs @	12.31 hrs, Volume=	2.723 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.57' Storage= 40,288 cf
Plug-Flow detention time= 66.1 min calculated for 2.714 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 15P: SUB-SURFACE POND

Inflow	=	33.39 cfs @	12.11 hrs, Volume=	2.501 af	
Outflow	=	18.88 cfs @	12.26 hrs, Volume=	2.415 af,	Atten= 43%, Lag= 9.0 min
Primary	=	18.88 cfs @	12.26 hrs, Volume=	2.415 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.25' Storage= 25,488 cf
Plug-Flow detention time= 44.3 min calculated for 2.415 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.00' S= 0.0000 '/' n= 0.013 Cc= 0.900

Pond 16P: SUBSURFACE STORAGE POND PARKING LOT

Inflow	=	9.65 cfs @	12.05 hrs,	Volume=	0.659 af
Outflow	=	2.76 cfs @	12.35 hrs,	Volume=	0.617 af, Atten= 71%, Lag= 18.0 min
Primary	=	2.76 cfs @	12.35 hrs,	Volume=	0.617 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.36' Storage= 10,649 cf
Plug-Flow detention time= 87.6 min calculated for 0.615 af (93% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**12.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 17P:

Inflow	=	28.15 cfs @	12.09 hrs,	Volume=	2.035 af
Outflow	=	15.86 cfs @	12.22 hrs,	Volume=	1.978 af, Atten= 44%, Lag= 7.7 min
Primary	=	15.86 cfs @	12.22 hrs,	Volume=	1.978 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.51' Storage= 19,696 cf
Plug-Flow detention time= 39.8 min calculated for 1.978 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 18P:

Inflow	=	49.10 cfs @	12.17 hrs,	Volume=	4.070 af
Outflow	=	22.38 cfs @	12.46 hrs,	Volume=	3.888 af, Atten= 54%, Lag= 17.6 min
Primary	=	22.38 cfs @	12.46 hrs,	Volume=	3.888 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.50' Storage= 54,984 cf
Plug-Flow detention time= 56.9 min calculated for 3.888 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 19x: (new node)

Inflow	=	34.79 cfs @	12.11 hrs,	Volume=	2.601 af
Outflow	=	19.80 cfs @	12.26 hrs,	Volume=	2.535 af, Atten= 43%, Lag= 9.1 min
Primary	=	19.80 cfs @	12.26 hrs,	Volume=	2.535 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.12' Storage= 24,500 cf
Plug-Flow detention time= 35.5 min calculated for 2.526 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 20P: (new node)

Inflow	=	36.80 cfs @	12.29 hrs,	Volume=	3.878 af
Outflow	=	20.16 cfs @	12.61 hrs,	Volume=	3.706 af, Atten= 45%, Lag= 18.9 min
Primary	=	20.16 cfs @	12.61 hrs,	Volume=	3.706 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.17' Storage= 49,803 cf
Plug-Flow detention time= 59.4 min calculated for 3.706 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 22p: p-lot subsurface det. pond

Inflow	=	43.71 cfs @	12.10 hrs,	Volume=	3.214 af
Outflow	=	18.58 cfs @	12.32 hrs,	Volume=	3.048 af, Atten= 57%, Lag= 13.4 min
Primary	=	18.58 cfs @	12.32 hrs,	Volume=	3.048 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.87' Storage= 44,992 cf
Plug-Flow detention time= 67.6 min calculated for 3.048 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

50-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=7.00"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=29.2 min CN=81 Area=22.450 ac Runoff= 71.59 cfs 8.398 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 156.21 cfs 20.403 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 51.14 cfs 7.417 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 15.75 cfs 1.272 af

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE
Tc=14.5 min CN=91 Area=7.390 ac Runoff= 36.95 cfs 3.448 af

Subcatchment 8c: CONVENTION CENTER
Tc=8.2 min CN=93 Area=11.270 ac Runoff= 68.79 cfs 5.456 af

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING
Tc=7.4 min CN=93 Area=6.740 ac Runoff= 42.24 cfs 3.263 af

Subcatchment 10S: area near trailer road
Tc=50.3 min CN=80 Area=11.560 ac Runoff= 27.59 cfs 4.192 af

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE
Tc=3.4 min CN=92 Area=5.000 ac Runoff= 35.30 cfs 2.380 af

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI
Tc=8.0 min CN=86 Area=6.770 ac Runoff= 38.03 cfs 2.858 af

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD
Tc=7.1 min CN=90 Area=5.010 ac Runoff= 30.67 cfs 2.296 af

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS
Tc=14.0 min CN=86 Area=7.960 ac Runoff= 37.54 cfs 3.355 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)
Tc=7.2 min CN=93 Area=7.350 ac Runoff= 46.34 cfs 3.559 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL
Tc=7.6 min CN=94 Area=7.230 ac Runoff= 45.42 cfs 3.560 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 16.28 cfs 1.559 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 48.24 cfs 4.757 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 24.91 cfs 3.604 af

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD
Tc=5.9 min CN=88 Area=0.700 ac Runoff= 4.30 cfs 0.308 af

Subcatchment 21L: AREA NEAR SERVICE STATION
Tc=3.8 min CN=84 Area=2.680 ac Runoff= 16.69 cfs 1.084 af

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE
Tc=12.1 min CN=87 Area=2.110 ac Runoff= 10.67 cfs 0.909 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=9.860 ac Runoff= 34.96 cfs 2.925 af

Subcatchment 24S: RESEARCH AND DEVELOPMENT
Tc=21.8 min CN=86 Area=10.130 ac Runoff= 40.25 cfs 4.261 af

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES
Tc=39.9 min CN=81 Area=10.650 ac Runoff= 29.33 cfs 3.971 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=84.9 min CN=72 Area=13.750 ac Runoff= 19.50 cfs 3.971 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=85.7 min CN=73 Area=13.620 ac Runoff= 19.68 cfs 4.048 af

Subcatchment 29S: CORPORATE RESIDENCE
Tc=59.6 min CN=86 Area=30.270 ac Runoff= 73.70 cfs 12.596 af

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL
Tc=7.1 min CN=88 Area=7.990 ac Runoff= 47.63 cfs 3.519 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 26.63 cfs 2.678 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 21.97 cfs 2.882 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 74.32 cfs 8.880 af

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=21.0 min CN=98 Area=3.960 ac Runoff= 18.17 cfs 2.058 af

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND
Tc=20.3 min CN=90 Area=15.060 ac Runoff= 65.46 cfs 6.885 af

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS
Tc=6.3 min CN=92 Area=4.740 ac Runoff= 30.30 cfs 2.255 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 21.06 cfs 1.813 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 56.05 cfs 4.940 af

Subcatchment 119L:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 29.99 cfs 3.322 af

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL
Tc=4.9 min CN=90 Area=4.030 ac Runoff= 26.22 cfs 1.848 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=15.4 min CN=72 Area=5.920 ac Runoff= 19.83 cfs 1.755 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=12.4 min CN=80 Area=12.310 ac Runoff= 54.28 cfs 4.517 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=75 Area=9.240 ac Runoff= 22.55 cfs 2.956 af

Subcatchment 213S: OFFICE ON AVENUE OF AMERICAS
Tc=5.8 min CN=91 Area=4.560 ac Runoff= 29.15 cfs 2.131 af

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET
Tc=15.2 min CN=80 Area=5.160 ac Runoff= 21.16 cfs 1.892 af

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL
Tc=3.4 min CN=94 Area=1.450 ac Runoff= 10.43 cfs 0.714 af

Subcatchment 230S: EDUCATION AND HOTELS AND REST
Tc=5.4 min CN=87 Area=7.290 ac Runoff= 44.58 cfs 3.146 af

Subcatchment 311S: LSI
Tc=22.3 min CN=89 Area=18.110 ac Runoff= 74.63 cfs 8.113 af

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD
Tc=7.4 min CN=88 Area=6.270 ac Runoff= 37.03 cfs 2.761 af

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE
Tc=3.5 min CN=91 Area=4.640 ac Runoff= 32.31 cfs 2.169 af

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD
Tc=6.2 min CN=89 Area=4.950 ac Runoff= 30.62 cfs 2.225 af

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=33.0 min CN=72 Area=7.950 ac Runoff= 19.28 cfs 2.342 af

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE
Tc=7.7 min CN=88 Area=6.220 ac Runoff= 36.38 cfs 2.739 af

Reach 1R: (new node) Inflow= 64.67 cfs 7.958 af
Length= 416.0' Max Vel= 12.7 fps Capacity= 80.79 cfs Outflow= 64.54 cfs 7.953 af

Reach 2R: (new node) Inflow= 89.34 cfs 18.833 af
Length= 670.0' Max Vel= 13.6 fps Capacity= 118.90 cfs Outflow= 89.30 cfs 18.815 af

Reach 3R: DP3 Inflow= 341.42 cfs 55.861 af
Length= 50.0' Max Vel= 7.8 fps Capacity= 1,521.75 cfs Outflow= 341.34 cfs 55.852 af

Reach 4R: (new node) Inflow= 66.48 cfs 13.691 af
Length= 641.0' Max Vel= 9.7 fps Capacity= 84.14 cfs Outflow= 66.45 cfs 13.674 af

Reach 5R: Inflow= 51.14 cfs 7.417 af
Length= 570.0' Max Vel= 9.6 fps Capacity= 60.37 cfs Outflow= 50.98 cfs 7.407 af

Reach 6R: Inflow= 75.77 cfs 12.165 af
Length= 350.0' Max Vel= 2.5 fps Capacity= 148.76 cfs Outflow= 75.70 cfs 12.131 af

Reach 7R: Inflow= 114.25 cfs 17.072 af
Length= 220.0' Max Vel= 4.8 fps Capacity= 504.53 cfs Outflow= 113.83 cfs 17.056 af

Reach 8R: Inflow= 187.23 cfs 25.936 af
Length= 45.0' Max Vel= 13.2 fps Capacity= 217.33 cfs Outflow= 187.19 cfs 25.934 af

Reach 9R: Inflow= 187.19 cfs 25.934 af
Length= 290.0' Max Vel= 4.5 fps Capacity= 278.93 cfs Outflow= 186.38 cfs 25.902 af

Reach 10R: Inflow= 320.27 cfs 53.040 af
Length= 280.0' Max Vel= 5.3 fps Capacity= 316.14 cfs Outflow= 319.47 cfs 52.980 af

Reach 11R: Inflow= 52.62 cfs 7.613 af
Length= 670.0' Max Vel= 10.0 fps Capacity= 55.41 cfs Outflow= 52.52 cfs 7.604 af

Reach 12R: (new node) Inflow= 17.75 cfs 3.383 af
Length= 612.0' Max Vel= 5.8 fps Capacity= 16.00 cfs Outflow= 16.70 cfs 3.377 af

Reach 12W: Inflow= 101.98 cfs 16.222 af
Length= 213.0' Max Vel= 22.5 fps Capacity= 147.66 cfs Outflow= 101.90 cfs 16.219 af

Reach 15R: Inflow= 41.36 cfs 4.010 af
Length= 22.0' Max Vel= 10.0 fps Capacity= 27.71 cfs Outflow= 27.71 cfs 4.009 af

Reach 16R: Inflow= 24.84 cfs 2.121 af
Length= 390.0' Max Vel= 8.2 fps Capacity= 22.62 cfs Outflow= 24.18 cfs 2.119 af

Reach 17R: Inflow= 4.30 cfs 0.308 af
Length= 465.0' Max Vel= 6.0 fps Capacity= 4.13 cfs Outflow= 4.02 cfs 0.308 af

Reach 21R: Inflow= 20.22 cfs 3.666 af
Length= 640.0' Max Vel= 14.9 fps Capacity= 23.49 cfs Outflow= 20.18 cfs 3.663 af

Reach 22R: Inflow= 17.77 cfs 3.386 af
Length= 396.0' Max Vel= 10.4 fps Capacity= 31.99 cfs Outflow= 17.75 cfs 3.383 af

Reach 27R: Inflow= 38.06 cfs 7.047 af
Length= 360.0' Max Vel= 12.2 fps Capacity= 33.55 cfs Outflow= 35.08 cfs 7.043 af

Reach 29R: Inflow= 318.87 cfs 54.227 af
Length= 1,062.0' Max Vel= 17.9 fps Capacity= 308.18 cfs Outflow= 318.09 cfs 54.158 af

Reach 30R: Inflow= 55.83 cfs 9.131 af
Length= 333.0' Max Vel= 13.9 fps Capacity= 94.33 cfs Outflow= 55.29 cfs 9.127 af

Reach 34R: Inflow= 42.92 cfs 6.974 af
Length= 500.0' Max Vel= 18.8 fps Capacity= 53.05 cfs Outflow= 42.86 cfs 6.970 af

Reach 40R: CHANNEL Inflow= 499.02 cfs 93.676 af
Length= 820.0' Max Vel= 7.3 fps Capacity= 539.62 cfs Outflow= 497.36 cfs 93.452 af

Reach 41R: SWALE Inflow= 41.31 cfs 7.433 af
Length= 890.0' Max Vel= 3.9 fps Capacity= 570.88 cfs Outflow= 41.11 cfs 7.397 af

Reach 42R: SWALE Inflow= 145.34 cfs 32.170 af
Length= 350.0' Max Vel= 5.1 fps Capacity= 1,142.31 cfs Outflow= 144.79 cfs 32.120 af

Reach 43R: Inflow= 122.15 cfs 16.564 af
Length= 255.0' Max Vel= 29.3 fps Capacity= 296.25 cfs Outflow= 121.99 cfs 16.561 af

Reach 44R: Inflow= 21.59 cfs 2.789 af
Length= 467.0' Max Vel= 5.4 fps Capacity= 36.45 cfs Outflow= 21.48 cfs 2.784 af

Reach 45R: Inflow= 0.00 cfs 0.000 af
Length= 126.0' Max Vel= 0.0 fps Capacity= 34.38 cfs Outflow= 0.00 cfs 0.000 af

Reach 46R: Inflow= 0.00 cfs 0.000 af
Length= 377.0' Max Vel= 0.0 fps Capacity= 40.58 cfs Outflow= 0.00 cfs 0.000 af

Reach 47R:
Length= 200.0' Max Vel= 0.0 fps Capacity= 14.00 cfs Outflow= 0.00 cfs 0.000 af

Reach 111x: (new node) Inflow= 85.20 cfs 12.495 af
Length= 1,426.0' Max Vel= 15.0 fps Capacity= 94.33 cfs Outflow= 80.57 cfs 12.474 af

Reach 113R: (new node) Inflow= 30.67 cfs 2.296 af
Length= 416.0' Max Vel= 15.5 fps Capacity= 45.24 cfs Outflow= 29.98 cfs 2.295 af

Reach 118R: Inflow= 21.16 cfs 1.892 af
Length= 400.0' Max Vel= 11.1 fps Capacity= 17.16 cfs Outflow= 17.38 cfs 1.891 af

Reach 119W: Inflow= 29.99 cfs 3.322 af
Length= 461.0' Max Vel= 10.1 fps Capacity= 27.72 cfs Outflow= 29.72 cfs 3.319 af

Reach 121W: (new node) Inflow= 73.79 cfs 12.907 af
Length= 312.0' Max Vel= 22.2 fps Capacity= 160.20 cfs Outflow= 73.73 cfs 12.903 af

Reach 122R: Inflow= 19.83 cfs 1.755 af
Length= 1,462.0' Max Vel= 3.0 fps Capacity= 263.47 cfs Outflow= 17.16 cfs 1.729 af

Reach 123R: (new node) Inflow= 41.84 cfs 4.655 af
Length= 500.0' Max Vel= 14.0 fps Capacity= 64.85 cfs Outflow= 41.62 cfs 4.651 af

Reach 124R: (new node) Inflow= 57.26 cfs 8.734 af
Length= 380.0' Max Vel= 10.6 fps Capacity= 66.70 cfs Outflow= 57.09 cfs 8.727 af

Reach 130W: (new node) Inflow= 63.43 cfs 11.124 af
Length= 511.0' Max Vel= 17.0 fps Capacity= 117.99 cfs Outflow= 63.35 cfs 11.117 af

Reach 134W: (new node) Inflow= 42.70 cfs 6.700 af
Length= 1,000.0' Max Vel= 18.6 fps Capacity= 52.57 cfs Outflow= 42.57 cfs 6.693 af

Reach 136R: (new node) Inflow= 24.01 cfs 4.327 af
Length= 616.0' Max Vel= 16.5 fps Capacity= 53.05 cfs Outflow= 23.99 cfs 4.324 af

Reach 221R: (new node) Inflow= 2.98 cfs 0.671 af
Length= 520.0' Max Vel= 11.6 fps Capacity= 10.60 cfs Outflow= 2.98 cfs 0.671 af

Reach 222W: (new node) Inflow= 3.21 cfs 0.794 af
Length= 900.0' Max Vel= 10.0 fps Capacity= 15.56 cfs Outflow= 3.20 cfs 0.792 af

Reach 225W: (new node) Inflow= 29.33 cfs 3.971 af
Length= 85.0' Max Vel= 11.5 fps Capacity= 31.99 cfs Outflow= 29.31 cfs 3.970 af

Reach 280R: Inflow= 73.02 cfs 17.274 af
Length= 200.0' Max Vel= 2.7 fps Capacity= 559.18 cfs Outflow= 72.94 cfs 17.235 af

Reach 313R: (new node) Inflow= 105.32 cfs 13.784 af
Length= 350.0' Max Vel= 23.8 fps Capacity= 156.42 cfs Outflow= 105.15 cfs 13.779 af

Reach 320R: (new node) Inflow= 72.22 cfs 10.122 af
Length= 503.0' Max Vel= 14.7 fps Capacity= 94.33 cfs Outflow= 72.12 cfs 10.115 af

Reach 334R: (new node) Inflow= 58.91 cfs 9.136 af
Length= 500.0' Max Vel= 19.3 fps Capacity= 53.05 cfs Outflow= 55.83 cfs 9.131 af

Reach 380R: Inflow= 19.68 cfs 4.048 af
Length= 1,090.0' Max Vel= 1.8 fps Capacity= 559.18 cfs Outflow= 19.31 cfs 3.987 af

Reach 523R: Inflow= 16.28 cfs 1.559 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 5.67 cfs 1.557 af

Reach 524R: Inflow= 21.39 cfs 2.829 af
Length= 80.0' Max Vel= 5.1 fps Capacity= 3.49 cfs Outflow= 3.60 cfs 2.829 af

Reach 525R: Inflow= 3.60 cfs 2.829 af
Length= 300.0' Max Vel= 3.3 fps Capacity= 11.72 cfs Outflow= 3.54 cfs 2.825 af

Reach 526R: Inflow= 3.54 cfs 2.825 af
Length= 550.0' Max Vel= 2.9 fps Capacity= 18.31 cfs Outflow= 3.51 cfs 2.817 af

Reach 528R: Inflow= 3.51 cfs 2.817 af
Length= 1,330.0' Max Vel= 2.8 fps Capacity= 29.20 cfs Outflow= 3.49 cfs 2.766 af

Reach DP#1: (new node) Inflow= 602.25 cfs 108.713 af
Outflow= 602.25 cfs 108.713 af

Reach DP#2: DESIGN POINT #2 Inflow= 72.94 cfs 17.235 af
Outflow= 72.94 cfs 17.235 af

Pond 1P: EXISTING POND Peak Storage= 149,786 cf Inflow= 564.47 cfs 101.849 af
Primary= 553.31 cfs 101.566 af Outflow= 553.31 cfs 101.566 af

Pond 2x: (new node) Peak Storage= 417,217 cf Inflow= 136.93 cfs 19.359 af
Primary= 48.70 cfs 15.609 af Outflow= 48.70 cfs 15.609 af

Pond 3P: Peak Storage= 6.505 af Inflow= 94.61 cfs 19.835 af
Primary= 73.02 cfs 17.274 af Outflow= 73.02 cfs 17.274 af

Pond 4P: (new node) Peak Storage= 111,452 cf Inflow= 73.70 cfs 12.596 af
Primary= 57.91 cfs 11.877 af Outflow= 57.91 cfs 11.877 af

Pond 5P: det pond Peak Storage= 264,035 cf Inflow= 150.78 cfs 23.823 af
Primary= 128.95 cfs 22.117 af Outflow= 128.95 cfs 22.117 af

Pond 7P: P-LOT DET. POND Peak Storage= 48,621 cf Inflow= 36.95 cfs 3.448 af
Primary= 16.93 cfs 3.271 af Outflow= 16.93 cfs 3.271 af

Pond 8P: (new node) Peak Storage= 50,308 cf Inflow= 45.42 cfs 3.560 af
Primary= 17.77 cfs 3.386 af Outflow= 17.77 cfs 3.386 af

Pond 9P: (new node) Peak Storage= 50,655 cf Inflow= 46.34 cfs 3.559 af
Primary= 17.88 cfs 3.384 af Outflow= 17.88 cfs 3.384 af

Pond 10P: P-LOT SUBSURFACE DET. POND Peak Storage= 43,964 cf Inflow= 42.24 cfs 3.263 af
Primary= 17.33 cfs 3.116 af Outflow= 17.33 cfs 3.116 af

Pond 11P: P-LOT SUBSURFACE DET. POND Peak Storage= 42,327 cf Inflow= 37.54 cfs 3.355 af
Primary= 18.47 cfs 3.218 af Outflow= 18.47 cfs 3.218 af

Pond 12C: P-LOT SUBSURFACE POND Peak Storage= 27,875 cf Inflow= 18.17 cfs 2.058 af
Primary= 10.23 cfs 1.939 af Outflow= 10.23 cfs 1.939 af

Pond 13P: SHARED P-LOT SUBSURFACE DET. POND Peak Storage= 57,668 cf Inflow= 59.42 cfs 4.386 af
Primary= 23.19 cfs 4.215 af Outflow= 23.19 cfs 4.215 af

Pond 14P: P-LOT SUBSURFACE DET.POND Peak Storage= 43,813 cf Inflow= 44.58 cfs 3.146 af
Primary= 17.25 cfs 2.996 af Outflow= 17.25 cfs 2.996 af

Pond 15P: SUB-SURFACE POND Peak Storage= 27,343 cf Inflow= 36.38 cfs 2.739 af
Primary= 20.59 cfs 2.650 af Outflow= 20.59 cfs 2.650 af

Pond 16P: SUBSURFACE STORAGE POND PARKING LOT Peak Storage= 11,469 cf Inflow= 10.43 cfs 0.714 af
Primary= 2.98 cfs 0.671 af Outflow= 2.98 cfs 0.671 af

Pond 17P: Peak Storage= 21,274 cf Inflow= 30.62 cfs 2.225 af
Primary= 16.53 cfs 2.165 af Outflow= 16.53 cfs 2.165 af

Pond 18P: Peak Storage= 60,695 cf Inflow= 54.28 cfs 4.517 af
Primary= 24.01 cfs 4.327 af Outflow= 24.01 cfs 4.327 af

Pond 19x: (new node) Peak Storage= 26,533 cf Inflow= 38.03 cfs 2.858 af
Primary= 21.59 cfs 2.789 af Outflow= 21.59 cfs 2.789 af

Pond 20P: (new node) Peak Storage= 54,012 cf Inflow= 40.25 cfs 4.261 af
Primary= 21.98 cfs 4.083 af Outflow= 21.98 cfs 4.083 af

Pond 22p: p-lot subsurface det. pond Peak Storage= 48,243 cf Inflow= 47.63 cfs 3.519 af
Primary= 20.42 cfs 3.347 af Outflow= 20.42 cfs 3.347 af

Pond 23C: p-lot subsurface det. pond Peak Storage= 18,414 cf Inflow= 10.67 cfs 0.909 af
Primary= 3.21 cfs 0.794 af Outflow= 3.21 cfs 0.794 af

Pond 24C: p-lot subsurface det. pond Peak Storage= 18,725 cf Inflow= 26.22 cfs 1.848 af
Primary= 14.60 cfs 1.790 af Outflow= 14.60 cfs 1.790 af

Pond 25w: SUB-SURFACE PARKING LOT POND Peak Storage= 85,859 cf Inflow= 68.79 cfs 5.456 af
Primary= 23.07 cfs 5.159 af Outflow= 23.07 cfs 5.159 af

Pond 311P: LSI POND Peak Storage= 1.124 af Inflow= 74.63 cfs 8.113 af
Primary= 64.67 cfs 7.958 af Outflow= 64.67 cfs 7.958 af

Runoff Area = 483.310 ac Volume = 194.392 af Average Depth = 4.83"

Subcatchment 1S: AREA NEAR POND

Runoff = 71.59 cfs @ 12.40 hrs, Volume= 8.398 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
9.810	77	Woods, Good, HSG D
2.940	98	Paved parking & roofs
9.700	80	Pasture/grassland/range, Good, HSG D
22.450	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.0150	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
13.0	670	0.0150	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	820	0.0150	7.9	570.88	**Trap/Vee/Rect Channel Flow,** Bot.W=6.00' D=4.00' Z= 3.0 '/' n= 0.040
29.2	1,640	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 156.21 cfs @ 12.44 hrs, Volume= 20.403 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 51.14 cfs @ 12.65 hrs, Volume= 7.417 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 15.75 cfs @ 12.14 hrs, Volume= 1.272 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE

Runoff = 36.95 cfs @ 12.19 hrs, Volume= 3.448 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
2.010	74	>75% Grass cover, Good, HSG C
5.380	98	Paved parking & roofs
7.390	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	190	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	20	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	105	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	320	0.0590	3.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.8	370	0.0216	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.0	520	0.0135	1.7		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.5	1,675	Total			

Subcatchment 8c: CONVENTION CENTER

Runoff = 68.79 cfs @ 12.11 hrs, Volume= 5.456 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
9.070	98	Paved parking & roofs
2.200	74	>75% Grass cover, Good, HSG C
11.270	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.5	50	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.6	970	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	1,170	Total			

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING

Runoff = 42.24 cfs @ 12.10 hrs, Volume= 3.263 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
5.420	98	Paved parking & roofs
1.320	74	>75% Grass cover, Good, HSG C
6.740	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	582	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	904	Total			

Subcatchment 10S: area near trailer road

Runoff = 27.59 cfs @ 12.68 hrs, Volume= 4.192 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
7.420	77	Woods, Good, HSG D
3.170	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
11.560	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.1	150	0.0159	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
9.3	353	0.0159	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.5	713	0.0112	1.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
50.3	1,781	Total			

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE

Runoff = 35.30 cfs @ 12.05 hrs, Volume= 2.380 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.650	98	Paved parking & roofs
1.350	74	Pasture/grassland/range, Good, HSG C
5.000	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.7	300	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	80	0.3300	23.4	421.71	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.00' Z= 3.0 '/' n= 0.040
3.4	530	Total			

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI

Runoff = 38.03 cfs @ 12.11 hrs, Volume= 2.858 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
2.940	74	Pasture/grassland/range, Good, HSG C
0.470	70	Woods, Good, HSG C
3.360	98	Paved parking & roofs
6.770	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0800	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.9	350	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	680	0.0210	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.0	1,180	Total			

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 30.67 cfs @ 12.10 hrs, Volume= 2.296 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.300	98	Paved parking & roofs
1.710	74	>75% Grass cover, Good, HSG C
5.010	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.9	350	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	65	0.3300	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	306	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	871	Total			

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS

Runoff = 37.54 cfs @ 12.19 hrs, Volume= 3.355 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.870	74	Pasture/grassland/range, Good, HSG C
4.090	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	150	0.0050	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.9	338	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	130	0.0462	4.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.8	585	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.0	1,203	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)

Runoff = 46.34 cfs @ 12.10 hrs, Volume= 3.559 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.500	74	Pasture/grassland/range, Good, HSG C
5.850	98	Paved parking & roofs
7.350	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	84	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	168	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	100	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	380	0.0950	4.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	88	0.0680	18.8	58.99	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
7.2	970	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL

Runoff = 45.42 cfs @ 12.11 hrs, Volume= 3.560 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.150	74	>75% Grass cover, Good, HSG C
6.080	98	Paved parking & roofs
7.230	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	115	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	35	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	115	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	0.0430	3.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	35	0.0200	8.4	14.86	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.6	947	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 16.28 cfs @ 12.23 hrs, Volume= 1.559 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 48.24 cfs @ 12.26 hrs, Volume= 4.757 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 24.91 cfs @ 12.60 hrs, Volume= 3.604 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD

Runoff = 4.30 cfs @ 12.09 hrs, Volume= 0.308 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
0.280	74	>75% Grass cover, Good, HSG C
0.420	98	Paved parking & roofs
0.700	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	150	0.1867	0.5		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.6	200	0.0833	5.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	350	Total			

Subcatchment 21L: AREA NEAR SERVICE STATION

Runoff = 16.69 cfs @ 12.06 hrs, Volume= 1.084 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.560	74	Pasture/grassland/range, Good, HSG C
1.120	98	Paved parking & roofs
2.680	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0722	2.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	127	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8	653	Total			

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE

Runoff = 10.67 cfs @ 12.16 hrs, Volume= 0.909 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
0.830	74	Pasture/grassland/range, Good, HSG C
0.130	70	Woods, Good, HSG C
1.150	98	Paved parking & roofs
2.110	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	150	0.0649	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.9	312	0.0649	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	275	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.1	737	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 34.96 cfs @ 12.18 hrs, Volume= 2.925 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
2.180	74	Pasture/grassland/range, Good, HSG C
7.310	70	Woods, Good, HSG C
0.370	98	PAVED
9.860	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: RESEARCH AND DEVELOPMENT

Runoff = 40.25 cfs @ 12.29 hrs, Volume= 4.261 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
2.550	74	Pasture/grassland/range, Good, HSG C
1.990	70	Woods, Good, HSG C
5.590	98	Paved parking & roofs
10.130	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.1116	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	242	0.1116	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	883	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.8	1,275	Total			

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES

Runoff = 29.33 cfs @ 12.54 hrs, Volume= 3.971 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.510	70	Woods, Good, HSG C
3.140	98	Paved parking & roofs
10.650	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.4	150	0.0200	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.3	500	0.0700	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	280	0.0930	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	24	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	215	0.1300	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
39.9	1,169	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 19.50 cfs @ 13.12 hrs, Volume= 3.971 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
9.790	70	Woods, Good, HSG C
0.060	87	Dirt roads, HSG C
3.520	74	Pasture/grassland/range, Good, HSG C
0.380	98	Paved parking & roofs
13.750	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	150	0.0800	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	410	0.0719	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
62.0	1,315	0.0050	0.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.5	470	0.0139	5.3	210.39	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
84.9	2,345	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 19.68 cfs @ 13.15 hrs, Volume= 4.048 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
9.040	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
0.960	98	Paved parking & roofs
13.620	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.4	150	0.0133	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
15.1	1,015	0.0500	1.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.2	358	0.0168	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.4	1,105	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.6	275	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
85.7	2,903	Total			

Subcatchment 29S: CORPORATE RESIDENCE

Runoff = 73.70 cfs @ 12.78 hrs, Volume= 12.596 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
5.940	74	Pasture/grassland/range, Good, HSG C
7.680	70	Woods, Good, HSG C
16.030	98	Paved parking & roofs
0.620	87	Dirt roads, HSG C
30.270	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.5	150	0.0100	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.5	370	0.0270	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.6	235	0.0940	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	175	0.2170	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	1,010	0.0180	2.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	680	0.0350	3.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	220	0.1640	6.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.9	200	0.0650	3.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
59.6	3,040	Total			

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL

Runoff = 47.63 cfs @ 12.10 hrs, Volume= 3.519 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.370	74	Pasture/grassland/range, Good, HSG C
4.620	98	Paved parking & roofs
7.990	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	290	0.0414	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	636	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	1,452	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 26.63 cfs @ 12.28 hrs, Volume= 2.678 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 21.97 cfs @ 12.52 hrs, Volume= 2.882 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 74.32 cfs @ 12.39 hrs, Volume= 8.880 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 18.17 cfs @ 12.27 hrs, Volume= 2.058 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.960	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.1	575	0.0133	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	533	0.0719	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.0	1,258	Total			

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND

Runoff = 65.46 cfs @ 12.27 hrs, Volume= 6.885 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
10.040	98	Paved parking & roofs
5.020	74	>75% Grass cover, Good, HSG C
15.060	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	150	0.1280	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	100	0.1280	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	1,020	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
20.3	1,270	Total			

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS

Runoff = 30.30 cfs @ 12.09 hrs, Volume= 2.255 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.520	98	Paved parking & roofs
1.220	74	Pasture/grassland/range, Good, HSG C
4.740	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.7	450	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	86	0.0233	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	686	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 21.06 cfs @ 12.18 hrs, Volume= 1.813 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 56.05 cfs @ 12.20 hrs, Volume= 4.940 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119L:

Runoff = 29.99 cfs @ 12.33 hrs, Volume= 3.322 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL

Runoff = 26.22 cfs @ 12.07 hrs, Volume= 1.848 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.350	74	>75% Grass cover, Good, HSG C
2.680	98	Paved parking & roofs
4.030	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0278	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.3	67	0.0278	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	280	0.0786	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	529	0.0340	3.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.9	1,026	Total			

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL

Runoff = 19.83 cfs @ 12.21 hrs, Volume= 1.755 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.340	74	Pasture/grassland/range, Good, HSG C
0.200	87	Dirt roads, HSG C
4.230	70	Woods, Good, HSG C
0.150	98	Paved parking & roofs
5.920	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.1456	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.5	166	0.1456	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	625	0.0100	9.5	56.73	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 4.0 '/' n= 0.011
15.4	941	Total			

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD

Runoff = 54.28 cfs @ 12.17 hrs, Volume= 4.517 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
4.710	74	Pasture/grassland/range, Good, HSG C
4.000	70	Woods, Good, HSG C
3.600	98	Paved parking & roofs
12.310	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	80	0.0750	2.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.9	70	0.0857	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.2	200	0.1600	2.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	500	0.0100	1.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.3	250	0.1600	15.8	252.16	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	450	0.0578	9.5	151.56	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
12.4	1,550	Total			

Subcatchment 200S: area along 207

Runoff = 22.55 cfs @ 12.53 hrs, Volume= 2.956 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
0.310	87	Dirt roads, HSG C
4.900	70	Woods, Good, HSG C
3.110	74	Pasture/grassland/range, Good, HSG C
0.920	98	Paved parking & roofs
9.240	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0273	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.6	326	0.0273	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	1,680	0.0214	5.8	92.22	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
1.8	650	0.0231	6.0	95.81	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
38.4	2,806	Total			

Subcatchment 213S: OFFICE ON AVENUE OF AMERICAS

Runoff = 29.15 cfs @ 12.08 hrs, Volume= 2.131 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.170	98	Paved parking & roofs
1.390	74	>75% Grass cover, Good, HSG C
4.560	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.2	390	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	88	0.0227	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.8	628	Total			

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET

Runoff = 21.16 cfs @ 12.21 hrs, Volume= 1.892 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.500	98	Paved parking & roofs
2.090	74	>75% Grass cover, Good, HSG C
1.570	70	Woods, Good, HSG C
5.160	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.1465	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.8	205	0.1465	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	190	0.0158	5.0	79.24	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
15.2	545	Total			

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL

Runoff = 10.43 cfs @ 12.05 hrs, Volume= 0.714 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.180	98	Paved parking & roofs
0.270	74	>75% Grass cover, Good, HSG C
1.450	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.3	35	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	252	0.0397	4.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	437	Total			

Subcatchment 230S: EDUCATION AND HOTELS AND REST

Runoff = 44.58 cfs @ 12.08 hrs, Volume= 3.146 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.920	98	Paved parking & roofs
3.370	74	>75% Grass cover, Good, HSG C
7.290	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.5	740	0.0568	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	446	0.0807	5.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	1,336	Total			

Subcatchment 311S: LSI

Runoff = 74.63 cfs @ 12.30 hrs, Volume= 8.113 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
11.570	98	Paved parking & roofs
6.540	74	>75% Grass cover, Good, HSG C
18.110	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	150	0.0300	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
3.4	250	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	1,180	0.0150	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.3	1,580	Total			

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD

Runoff = 37.03 cfs @ 12.10 hrs, Volume= 2.761 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.710	98	Paved parking & roofs
2.560	74	>75% Grass cover, Good, HSG C
6.270	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	136	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.8	493	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	375	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	1,154	Total			

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE

Runoff = 32.31 cfs @ 12.05 hrs, Volume= 2.169 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.190	98	Paved parking & roofs
1.450	74	>75% Grass cover, Good, HSG C
4.640	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	150	0.0400	2.1		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	550	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	700	Total			

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 30.62 cfs @ 12.09 hrs, Volume= 2.225 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
1.850	74	>75% Grass cover, Good, HSG C
3.100	98	Paved parking & roofs
4.950	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	394	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	189	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	170	0.3333	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	903	Total			

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 19.28 cfs @ 12.46 hrs, Volume= 2.342 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.220	74	Pasture/grassland/range, Good, HSG C
7.950	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.7	200	0.0200	0.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.7	700	0.2500	2.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.3	1,500	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
33.0	2,550	Total			

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE

Runoff = 36.38 cfs @ 12.11 hrs, Volume= 2.739 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=7.00"

Area (ac)	CN	Description
3.570	98	Paved parking & roofs
2.650	74	>75% Grass cover, Good, HSG C
6.220	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	150	0.0067	1.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	70	0.0067	1.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	510	0.0275	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	170	0.0706	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	465	0.0645	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	1,365	Total			

Reach 1R: (new node)

Inflow = 64.67 cfs @ 12.42 hrs, Volume= 7.958 af
Outflow = 64.54 cfs @ 12.44 hrs, Volume= 7.953 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.7 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.5 fps, Avg. Travel Time= 1.3 min

Peak Depth= 2.03'
Capacity at bank full= 80.79 cfs
36.0" Diameter Pipe n= 0.012 Length= 416.0' Slope= 0.0125 '/'

Reach 2R: (new node)

Inflow	=	89.34 cfs @	12.49 hrs,	Volume=	18.833 af
Outflow	=	89.30 cfs @	12.49 hrs,	Volume=	18.815 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.6 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 7.0 fps, Avg. Travel Time= 1.6 min

Peak Depth= 2.26'
Capacity at bank full= 118.90 cfs
42.0" Diameter Pipe n= 0.011 Length= 670.0' Slope= 0.0100 '/'

Reach 3R: DP3

Inflow	=	341.42 cfs @	12.53 hrs,	Volume=	55.861 af
Outflow	=	341.34 cfs @	12.53 hrs,	Volume=	55.852 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.8 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 0.3 min

Peak Depth= 2.20'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 4R: (new node)

Inflow	=	66.48 cfs @	12.50 hrs,	Volume=	13.691 af
Outflow	=	66.45 cfs @	12.53 hrs,	Volume=	13.674 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.7 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 4.9 fps, Avg. Travel Time= 2.2 min

Peak Depth= 2.35'
Capacity at bank full= 84.14 cfs
42.0" Diameter Pipe n= 0.011 Length= 641.0' Slope= 0.0050 '/'

Reach 5R:

Inflow	=	51.14 cfs @	12.65 hrs,	Volume=	7.417 af
Outflow	=	50.98 cfs @	12.68 hrs,	Volume=	7.407 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 2.0 min

Peak Depth= 2.12'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow	=	75.77 cfs @	12.46 hrs,	Volume=	12.165 af
Outflow	=	75.70 cfs @	12.53 hrs,	Volume=	12.131 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.5 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 4.7 min

Peak Depth= 2.66'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow	=	114.25 cfs @	12.30 hrs,	Volume=	17.072 af
Outflow	=	113.83 cfs @	12.33 hrs,	Volume=	17.056 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.8 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 1.6 min

Peak Depth= 2.20'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow	=	187.23 cfs @	12.36 hrs,	Volume=	25.936 af
Outflow	=	187.19 cfs @	12.36 hrs,	Volume=	25.934 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.2 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.7 fps, Avg. Travel Time= 0.1 min

Peak Depth= 3.54'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow = 187.19 cfs @ 12.36 hrs, Volume= 25.934 af
Outflow = 186.38 cfs @ 12.40 hrs, Volume= 25.902 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.5 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 2.3 min

Peak Depth= 3.40'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow = 320.27 cfs @ 12.50 hrs, Volume= 53.040 af
Outflow = 319.47 cfs @ 12.53 hrs, Volume= 52.980 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.3 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 1.9 min

Peak Depth= 4.02'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow = 52.62 cfs @ 12.60 hrs, Volume= 7.613 af
Outflow = 52.52 cfs @ 12.63 hrs, Volume= 7.604 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 2.4 min

Peak Depth= 1.55'
Capacity at bank full= 55.41 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R: (new node)

Inflow = 17.75 cfs @ 12.38 hrs, Volume= 3.383 af
Outflow = 16.70 cfs @ 12.32 hrs, Volume= 3.377 af, Atten= 6%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.8 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 3.3 min

Peak Depth= 2.00'
Capacity at bank full= 16.00 cfs
24.0" Diameter Pipe n= 0.013 Length= 612.0' Slope= 0.0050 '/'

Reach 12W:

Inflow	=	101.98 cfs @	12.42 hrs,	Volume=	16.222 af
Outflow	=	101.90 cfs @	12.42 hrs,	Volume=	16.219 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 22.5 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 10.6 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.83'
Capacity at bank full= 147.66 cfs
36.0" Diameter Pipe n= 0.013 Length= 213.0' Slope= 0.0490 '/'

Reach 15R:

Inflow	=	41.36 cfs @	12.20 hrs,	Volume=	4.010 af
Outflow	=	27.71 cfs @	12.15 hrs,	Volume=	4.009 af, Atten= 33%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	24.84 cfs @	12.17 hrs,	Volume=	2.121 af
Outflow	=	24.18 cfs @	12.20 hrs,	Volume=	2.119 af, Atten= 3%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.2 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.5 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.87'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	4.30 cfs @	12.09 hrs,	Volume=	0.308 af
Outflow	=	4.02 cfs @	12.13 hrs,	Volume=	0.308 af, Atten= 6%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 3.2 min

Peak Depth= 0.83'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 21R:

Inflow	=	20.22 cfs @	12.32 hrs,	Volume=	3.666 af
Outflow	=	20.18 cfs @	12.34 hrs,	Volume=	3.663 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.9 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 7.3 fps, Avg. Travel Time= 1.5 min

Peak Depth= 1.07'
Capacity at bank full= 23.49 cfs
18.0" Diameter Pipe n= 0.013 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow	=	17.77 cfs @	12.36 hrs,	Volume=	3.386 af
Outflow	=	17.75 cfs @	12.38 hrs,	Volume=	3.383 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.4 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.2 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.06'
Capacity at bank full= 31.99 cfs
24.0" Diameter Pipe n= 0.013 Length= 396.0' Slope= 0.0200 '/'

Reach 27R:

Inflow	=	38.06 cfs @	12.35 hrs,	Volume=	7.047 af
Outflow	=	35.08 cfs @	12.21 hrs,	Volume=	7.043 af, Atten= 8%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.2 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 6.4 fps, Avg. Travel Time= 0.9 min

Peak Depth= 2.00'
Capacity at bank full= 33.55 cfs
24.0" Diameter Pipe n= 0.013 Length= 360.0' Slope= 0.0220 '/'

Reach 29R:

Inflow	=	318.87 cfs @	12.43 hrs,	Volume=	54.227 af
Outflow	=	318.09 cfs @	12.47 hrs,	Volume=	54.158 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.9 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 9.4 fps, Avg. Travel Time= 1.9 min

Peak Depth= 4.27'
Capacity at bank full= 308.18 cfs
60.0" Diameter Pipe n= 0.013 Length= 1,062.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	55.83 cfs @	12.26 hrs,	Volume=	9.131 af
Outflow	=	55.29 cfs @	12.27 hrs,	Volume=	9.127 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.9 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.3 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.66'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 333.0' Slope= 0.0200 '/'

Reach 34R:

Inflow	=	42.92 cfs @	12.35 hrs,	Volume=	6.974 af
Outflow	=	42.86 cfs @	12.36 hrs,	Volume=	6.970 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 8.7 fps, Avg. Travel Time= 1.0 min

Peak Depth= 1.36'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0550 '/'

Reach 40R: CHANNEL

Inflow	=	499.02 cfs @	12.46 hrs,	Volume=	93.676 af
Outflow	=	497.36 cfs @	12.51 hrs,	Volume=	93.452 af, Atten= 0%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.3 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 3.7 fps, Avg. Travel Time= 3.7 min

Peak Depth= 3.86'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 41.31 cfs @ 12.40 hrs, Volume= 7.433 af
Outflow = 41.11 cfs @ 12.51 hrs, Volume= 7.397 af, Atten= 0%, Lag= 6.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.9 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 8.5 min

Peak Depth= 1.12'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 145.34 cfs @ 12.21 hrs, Volume= 32.170 af
Outflow = 144.79 cfs @ 12.25 hrs, Volume= 32.120 af, Atten= 0%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 2.3 min

Peak Depth= 1.59'
Capacity at bank full= 1,142.31 cfs
8.00' x 4.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 122.15 cfs @ 12.16 hrs, Volume= 16.564 af
Outflow = 121.99 cfs @ 12.17 hrs, Volume= 16.561 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 29.3 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 12.9 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.57'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 21.59 cfs @ 12.26 hrs, Volume= 2.789 af
Outflow = 21.48 cfs @ 12.31 hrs, Volume= 2.784 af, Atten= 1%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.4 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 3.4 min

Peak Depth= 1.66'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Outflow	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 111x: (new node)

Inflow	=	85.20 cfs @	12.06 hrs,	Volume=	12.495 af
Outflow	=	80.57 cfs @	12.43 hrs,	Volume=	12.474 af, Atten= 5%, Lag= 21.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.0 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 7.3 fps, Avg. Travel Time= 3.2 min

Peak Depth= 2.17'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 1,426.0' Slope= 0.0200 '/'

Reach 113R: (new node)

Inflow	=	30.67 cfs @ 12.10 hrs, Volume=	2.296 af	
Outflow	=	29.98 cfs @ 12.11 hrs, Volume=	2.295 af, Atten= 2%, Lag= 0.7 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.5 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.0 fps, Avg. Travel Time= 1.1 min

Peak Depth= 1.21'
Capacity at bank full= 45.24 cfs
24.0" Diameter Pipe n= 0.013 Length= 416.0' Slope= 0.0400 '/'

Reach 118R:

Inflow	=	21.16 cfs @ 12.21 hrs, Volume=	1.892 af	
Outflow	=	17.38 cfs @ 12.45 hrs, Volume=	1.891 af, Atten= 18%, Lag= 14.5 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.1 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.50'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119W:

Inflow	=	29.99 cfs @ 12.33 hrs, Volume=	3.322 af	
Outflow	=	29.72 cfs @ 12.36 hrs, Volume=	3.319 af, Atten= 1%, Lag= 2.1 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.6 fps, Avg. Travel Time= 1.7 min

Peak Depth= 1.86'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 121W: (new node)

Inflow	=	73.79 cfs @ 12.46 hrs, Volume=	12.907 af	
Outflow	=	73.73 cfs @ 12.47 hrs, Volume=	12.903 af, Atten= 0%, Lag= 0.4 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 22.2 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 10.5 fps, Avg. Travel Time= 0.5 min

Peak Depth= 1.43'
Capacity at bank full= 160.20 cfs
36.0" Diameter Pipe n= 0.013 Length= 312.0' Slope= 0.0577 '/'

Reach 122R:

Inflow	=	19.83 cfs @ 12.21 hrs, Volume=	1.755 af	
Outflow	=	17.16 cfs @ 12.45 hrs, Volume=	1.729 af, Atten= 13%, Lag= 14.1 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 8.3 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 22.4 min

Peak Depth= 0.47'
Capacity at bank full= 263.47 cfs
10.00' x 2.00' deep channel, n= 0.040 Length= 1,462.0' Slope= 0.0218 '/'
Side Slope Z-value= 5.0 '/'

Reach 123R: (new node)

Inflow	=	41.84 cfs @ 12.21 hrs, Volume=	4.655 af	
Outflow	=	41.62 cfs @ 12.22 hrs, Volume=	4.651 af, Atten= 1%, Lag= 1.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 6.4 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.46'
Capacity at bank full= 64.85 cfs
30.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0250 '/'

Reach 124R: (new node)

Inflow	=	57.26 cfs @ 12.40 hrs, Volume=	8.734 af	
Outflow	=	57.09 cfs @ 12.42 hrs, Volume=	8.727 af, Atten= 0%, Lag= 1.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.6 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 1.3 min

Peak Depth= 2.14'
Capacity at bank full= 66.70 cfs
36.0" Diameter Pipe n= 0.013 Length= 380.0' Slope= 0.0100 '/'

Reach 130W: (new node)

Inflow	=	63.43 cfs @	12.49 hrs, Volume=	11.124 af	
Outflow	=	63.35 cfs @	12.51 hrs, Volume=	11.117 af,	Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.0 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 8.0 fps, Avg. Travel Time= 1.1 min

Peak Depth= 1.57'
Capacity at bank full= 117.99 cfs
36.0" Diameter Pipe n= 0.013 Length= 511.0' Slope= 0.0313 '/'

Reach 134W: (new node)

Inflow	=	42.70 cfs @	12.55 hrs, Volume=	6.700 af	
Outflow	=	42.57 cfs @	12.58 hrs, Volume=	6.693 af,	Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 18.6 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 8.8 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.37'
Capacity at bank full= 52.57 cfs
24.0" Diameter Pipe n= 0.013 Length= 1,000.0' Slope= 0.0540 '/'

Reach 136R: (new node)

Inflow	=	24.01 cfs @	12.47 hrs, Volume=	4.327 af	
Outflow	=	23.99 cfs @	12.49 hrs, Volume=	4.324 af,	Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.5 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 7.9 fps, Avg. Travel Time= 1.3 min

Peak Depth= 0.94'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 616.0' Slope= 0.0550 '/'

Reach 221R: (new node)

Inflow	=	2.98 cfs @	12.35 hrs, Volume=	0.671 af	
Outflow	=	2.98 cfs @	12.37 hrs, Volume=	0.671 af,	Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.6 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 5.9 fps, Avg. Travel Time= 1.5 min

Peak Depth= 0.36'
Capacity at bank full= 10.60 cfs
12.0" Diameter Pipe n= 0.013 Length= 520.0' Slope= 0.0885 '/'

Reach 222W: (new node)

Inflow	=	3.21 cfs @	12.57 hrs,	Volume=	0.794 af
Outflow	=	3.20 cfs @	12.61 hrs,	Volume=	0.792 af, Atten= 0%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.0 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 3.0 min

Peak Depth= 0.38'
Capacity at bank full= 15.56 cfs
15.0" Diameter Pipe n= 0.013 Length= 900.0' Slope= 0.0580 '/'

Reach 225W: (new node)

Inflow	=	29.33 cfs @	12.54 hrs,	Volume=	3.971 af
Outflow	=	29.31 cfs @	12.55 hrs,	Volume=	3.970 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.5 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.51'
Capacity at bank full= 31.99 cfs
24.0" Diameter Pipe n= 0.013 Length= 85.0' Slope= 0.0200 '/'

Reach 280R:

Inflow	=	73.02 cfs @	13.75 hrs,	Volume=	17.274 af
Outflow	=	72.94 cfs @	13.78 hrs,	Volume=	17.235 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.7 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 2.7 min

Peak Depth= 1.52'
Capacity at bank full= 559.18 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 200.0' Slope= 0.0050 '/'
Side Slope Z-value= 5.0 '/'

Reach 313R: (new node)

Inflow	=	105.32 cfs @	12.14 hrs,	Volume=	13.784 af
Outflow	=	105.15 cfs @	12.15 hrs,	Volume=	13.779 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 23.8 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 10.6 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.81'
Capacity at bank full= 156.42 cfs
36.0" Diameter Pipe n= 0.013 Length= 350.0' Slope= 0.0550 '/'

Reach 320R: (new node)

Inflow	=	72.22 cfs @	12.39 hrs,	Volume=	10.122 af
Outflow	=	72.12 cfs @	12.41 hrs,	Volume=	10.115 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.7 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 6.8 fps, Avg. Travel Time= 1.2 min

Peak Depth= 1.97'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 503.0' Slope= 0.0200 '/'

Reach 334R: (new node)

Inflow	=	58.91 cfs @	12.34 hrs,	Volume=	9.136 af
Outflow	=	55.83 cfs @	12.26 hrs,	Volume=	9.131 af, Atten= 5%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 19.3 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 9.4 fps, Avg. Travel Time= 0.9 min

Peak Depth= 2.00'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0550 '/'

Reach 380R:

Inflow	=	19.68 cfs @	13.15 hrs,	Volume=	4.048 af
Outflow	=	19.31 cfs @	13.44 hrs,	Volume=	3.987 af, Atten= 2%, Lag= 17.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.8 fps, Min. Travel Time= 9.8 min
Avg. Velocity = 0.9 fps, Avg. Travel Time= 19.7 min

Peak Depth= 0.76'
Capacity at bank full= 559.18 cfs
10.00' x 4.00' deep channel, n= 0.040 Length= 1,090.0' Slope= 0.0050 '/'
Side Slope Z-value= 5.0 '/'

Reach 523R:

Inflow = 16.28 cfs @ 12.23 hrs, Volume= 1.559 af
Outflow = 5.67 cfs @ 12.00 hrs, Volume= 1.557 af, Atten= 65%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 524R:

Inflow = 21.39 cfs @ 12.14 hrs, Volume= 2.829 af
Outflow = 3.60 cfs @ 11.56 hrs, Volume= 2.829 af, Atten= 83%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.9 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 525R:

Inflow = 3.60 cfs @ 11.56 hrs, Volume= 2.829 af
Outflow = 3.54 cfs @ 11.62 hrs, Volume= 2.825 af, Atten= 1%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.3 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 1.9 min

Peak Depth= 0.76'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 526R:

Inflow = 3.54 cfs @ 11.62 hrs, Volume= 2.825 af
Outflow = 3.51 cfs @ 11.72 hrs, Volume= 2.817 af, Atten= 1%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 3.9 min

Peak Depth= 0.74'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 528R:

Inflow	=	3.51 cfs @	11.72 hrs,	Volume=	2.817 af
Outflow	=	3.49 cfs @	14.90 hrs,	Volume=	2.766 af, Atten= 1%, Lag= 190.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 9.9 min

Peak Depth= 0.70'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach DP#1: (new node)

Inflow	=	602.25 cfs @	12.57 hrs,	Volume=	108.713 af
Outflow	=	602.25 cfs @	12.57 hrs,	Volume=	108.713 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow	=	72.94 cfs @	13.78 hrs,	Volume=	17.235 af
Outflow	=	72.94 cfs @	13.78 hrs,	Volume=	17.235 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow	=	564.47 cfs @	12.48 hrs,	Volume=	101.849 af
Outflow	=	553.31 cfs @	12.57 hrs,	Volume=	101.566 af, Atten= 2%, Lag= 5.1 min
Primary	=	553.31 cfs @	12.57 hrs,	Volume=	101.566 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 393.01' Storage= 149,786 cf
Plug-Flow detention time= 4.9 min calculated for 101.228 af (99% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Culvert
- 4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

Pond 2x: (new node)

Inflow	=	136.93 cfs @	12.35 hrs,	Volume=	19.359 af
Outflow	=	48.70 cfs @	12.94 hrs,	Volume=	15.609 af, Atten= 64%, Lag= 35.5 min
Primary	=	48.70 cfs @	12.94 hrs,	Volume=	15.609 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 7.72' Storage= 417,217 cf
Plug-Flow detention time= 154.1 min calculated for 15.609 af (81% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	54,014	0	0
8.00	54,014	432,112	432,112

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	2.00'	**30.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 1.75' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 3P:

Inflow	=	94.61 cfs @	13.20 hrs,	Volume=	19.835 af
Outflow	=	73.02 cfs @	13.75 hrs,	Volume=	17.274 af, Atten= 23%, Lag= 32.5 min
Primary	=	73.02 cfs @	13.75 hrs,	Volume=	17.274 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 5.67' Storage= 6.505 af
Plug-Flow detention time= 93.4 min calculated for 17.217 af (87% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
0.00	1.148	0.000	0.000
6.00	1.148	6.888	6.888

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= 0.99' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	5.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 4P: (new node)

Inflow	=	73.70 cfs @	12.78 hrs,	Volume=	12.596 af
Outflow	=	57.91 cfs @	13.12 hrs,	Volume=	11.877 af, Atten= 21%, Lag= 20.0 min
Primary	=	57.91 cfs @	13.12 hrs,	Volume=	11.877 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 5.57' Storage= 111,452 cf
Plug-Flow detention time= 53.2 min calculated for 11.838 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	19,994	0	0
4.00	19,994	79,976	79,976
6.00	19,994	39,988	119,964

Primary OutFlow (Free Discharge)
└─1=Culvert
└─2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -22.00' S= 0.1100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -21.00' S= 0.1100 '/' n= 0.013 Cc= 0.900

Pond 5P: det pond

Inflow	=	150.78 cfs @	12.46 hrs,	Volume=	23.823 af
Outflow	=	128.95 cfs @	12.73 hrs,	Volume=	22.117 af, Atten= 14%, Lag= 16.1 min
Primary	=	128.95 cfs @	12.73 hrs,	Volume=	22.117 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 5.87' Storage= 264,035 cf
Plug-Flow detention time= 69.0 min calculated for 22.044 af (93% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	44,997	0	0
6.00	44,997	269,982	269,982

Primary OutFlow (Free Discharge)
└─1=Culvert
└─2=Culvert
└─3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	1.00'	**42.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.50' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	0.00'	**12.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	4.50'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 7P: P-LOT DET. POND

Inflow	=	36.95 cfs @	12.19 hrs,	Volume=	3.448 af
Outflow	=	16.93 cfs @	12.50 hrs,	Volume=	3.271 af, Atten= 54%, Lag= 18.1 min
Primary	=	16.93 cfs @	12.50 hrs,	Volume=	3.271 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.75' Storage= 48,621 cf
Plug-Flow detention time= 71.4 min calculated for 3.271 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 8P: (new node)

Inflow	=	45.42 cfs @	12.11 hrs,	Volume=	3.560 af
Outflow	=	17.77 cfs @	12.36 hrs,	Volume=	3.386 af, Atten= 61%, Lag= 15.3 min
Primary	=	17.77 cfs @	12.36 hrs,	Volume=	3.386 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.85' Storage= 50,308 cf
Plug-Flow detention time= 71.4 min calculated for 3.374 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,622	0	0
4.00	17,622	70,488	70,488

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 9P: (new node)

Inflow	=	46.34 cfs @	12.10 hrs,	Volume=	3.559 af
Outflow	=	17.88 cfs @	12.35 hrs,	Volume=	3.384 af, Atten= 61%, Lag= 15.2 min
Primary	=	17.88 cfs @	12.35 hrs,	Volume=	3.384 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.87' Storage= 50,655 cf
Plug-Flow detention time= 71.5 min calculated for 3.384 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 10P: P-LOT SUBSURFACE DET. POND

Inflow	=	42.24 cfs @	12.10 hrs, Volume=	3.263 af	
Outflow	=	17.33 cfs @	12.34 hrs, Volume=	3.116 af,	Atten= 59%, Lag= 14.2 min
Primary	=	17.33 cfs @	12.34 hrs, Volume=	3.116 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.80' Storage= 43,964 cf
Plug-Flow detention time= 65.8 min calculated for 3.105 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 11P: P-LOT SUBSURFACE DET. POND

Inflow	=	37.54 cfs @	12.19 hrs, Volume=	3.355 af	
Outflow	=	18.47 cfs @	12.47 hrs, Volume=	3.218 af,	Atten= 51%, Lag= 16.6 min
Primary	=	18.47 cfs @	12.47 hrs, Volume=	3.218 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.70' Storage= 42,327 cf
Plug-Flow detention time= 55.6 min calculated for 3.207 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 560.0' long Culvert** Ke= 0.600 Outlet Invert= -5.60' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 12C: P-LOT SUBSURFACE POND

Inflow	=	18.17 cfs @	12.27 hrs, Volume=	2.058 af
Outflow	=	10.23 cfs @	12.57 hrs, Volume=	1.939 af, Atten= 44%, Lag= 17.6 min
Primary	=	10.23 cfs @	12.57 hrs, Volume=	1.939 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.78' Storage= 27,875 cf
Plug-Flow detention time= 80.0 min calculated for 1.932 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 13P: SHARED P-LOT SUBSURFACE DET. POND

Inflow	=	59.42 cfs @	12.09 hrs, Volume=	4.386 af
Outflow	=	23.19 cfs @	12.32 hrs, Volume=	4.215 af, Atten= 61%, Lag= 14.0 min
Primary	=	23.19 cfs @	12.32 hrs, Volume=	4.215 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.67' Storage= 57,668 cf
Plug-Flow detention time= 59.7 min calculated for 4.215 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 14P: P-LOT SUBSURFACE DET.POND

Inflow	=	44.58 cfs @	12.08 hrs, Volume=	3.146 af	
Outflow	=	17.25 cfs @	12.31 hrs, Volume=	2.996 af,	Atten= 61%, Lag= 14.1 min
Primary	=	17.25 cfs @	12.31 hrs, Volume=	2.996 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.79' Storage= 43,813 cf
Plug-Flow detention time= 64.6 min calculated for 2.986 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 15P: SUB-SURFACE POND

Inflow	=	36.38 cfs @	12.11 hrs, Volume=	2.739 af	
Outflow	=	20.59 cfs @	12.26 hrs, Volume=	2.650 af,	Atten= 43%, Lag= 8.9 min
Primary	=	20.59 cfs @	12.26 hrs, Volume=	2.650 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.48' Storage= 27,343 cf
Plug-Flow detention time= 42.6 min calculated for 2.641 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.00' S= 0.0000 '/' n= 0.013 Cc= 0.900

Pond 16P: SUBSURFACE STORAGE POND PARKING LOT

Inflow	=	10.43 cfs @	12.05 hrs, Volume=	0.714 af	
Outflow	=	2.98 cfs @	12.35 hrs, Volume=	0.671 af,	Atten= 71%, Lag= 18.0 min
Primary	=	2.98 cfs @	12.35 hrs, Volume=	0.671 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.46' Storage= 11,469 cf
Plug-Flow detention time= 86.3 min calculated for 0.671 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**12.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 17P:

Inflow	=	30.62 cfs @	12.09 hrs, Volume=	2.225 af	
Outflow	=	16.53 cfs @	12.23 hrs, Volume=	2.165 af,	Atten= 46%, Lag= 8.1 min
Primary	=	16.53 cfs @	12.23 hrs, Volume=	2.165 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.71' Storage= 21,274 cf
Plug-Flow detention time= 38.7 min calculated for 2.165 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 18P:

Inflow	=	54.28 cfs @	12.17 hrs,	Volume=	4.517 af
Outflow	=	24.01 cfs @	12.47 hrs,	Volume=	4.327 af, Atten= 56%, Lag= 18.1 min
Primary	=	24.01 cfs @	12.47 hrs,	Volume=	4.327 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.87' Storage= 60,695 cf
Plug-Flow detention time= 55.7 min calculated for 4.327 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 19x: (new node)

Inflow	=	38.03 cfs @	12.11 hrs,	Volume=	2.858 af
Outflow	=	21.59 cfs @	12.26 hrs,	Volume=	2.789 af, Atten= 43%, Lag= 9.1 min
Primary	=	21.59 cfs @	12.26 hrs,	Volume=	2.789 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.38' Storage= 26,533 cf
Plug-Flow detention time= 34.6 min calculated for 2.780 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 20P: (new node)

Inflow	=	40.25 cfs @	12.29 hrs,	Volume=	4.261 af
Outflow	=	21.98 cfs @	12.61 hrs,	Volume=	4.083 af, Atten= 45%, Lag= 18.9 min
Primary	=	21.98 cfs @	12.61 hrs,	Volume=	4.083 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.44' Storage= 54,012 cf
Plug-Flow detention time= 58.1 min calculated for 4.083 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 22p: p-lot subsurface det. pond

Inflow	=	47.63 cfs @	12.10 hrs,	Volume=	3.519 af
Outflow	=	20.42 cfs @	12.32 hrs,	Volume=	3.347 af, Atten= 57%, Lag= 13.2 min
Primary	=	20.42 cfs @	12.32 hrs,	Volume=	3.347 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.07' Storage= 48,243 cf
Plug-Flow detention time= 65.6 min calculated for 3.347 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 25w: SUB-SURFACE PARKING LOT POND

Inflow	=	68.79 cfs @	12.11 hrs,	Volume=	5.456 af
Outflow	=	23.07 cfs @	12.43 hrs,	Volume=	5.159 af, Atten= 66%, Lag= 19.0 min
Primary	=	23.07 cfs @	12.43 hrs,	Volume=	5.159 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.65' Storage= 85,859 cf
Plug-Flow detention time= 81.8 min calculated for 5.159 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	23,550	0	0
4.00	23,550	94,200	94,200

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 311P: LSI POND

Inflow	=	74.63 cfs @	12.30 hrs,	Volume=	8.113 af
Outflow	=	64.67 cfs @	12.42 hrs,	Volume=	7.958 af, Atten= 13%, Lag= 7.4 min
Primary	=	64.67 cfs @	12.42 hrs,	Volume=	7.958 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 444.04' Storage= 1.124 af
Plug-Flow detention time= 27.3 min calculated for 7.958 af (98% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
439.50	0.000	0.000	0.000
440.00	0.217	0.054	0.054
442.00	0.263	0.480	0.534
444.00	0.313	0.576	1.110
446.00	0.366	0.679	1.789
448.00	0.422	0.788	2.577
450.00	0.479	0.901	3.478

Primary OutFlow (Free Discharge)
- 1=Orifice/Grate
- 2=Orifice/Grate
- 3=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	439.50'	**1.0" Vert. Orifice/Grate** C= 0.600
2	Primary	440.00'	**2.00' x 2.33' Vert. Orifice/Grate** C= 0.600
3	Primary	442.75'	**30.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

100-Year, 24-Hour Storm Event

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=8.00"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA NEAR POND
Tc=29.2 min CN=81 Area=22.450 ac Runoff= 85.08 cfs 10.057 af

Subcatchment 2S: EAST SIDE OF BREUNIG
Tc=33.0 min CN=91 Area=43.890 ac Runoff= 180.67 cfs 23.776 af

Subcatchment 5S: ne corner of site grass and woodland
Tc=47.3 min CN=73 Area=24.590 ac Runoff= 62.49 cfs 9.096 af

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED
Tc=9.8 min CN=88 Area=2.890 ac Runoff= 18.33 cfs 1.494 af

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE
Tc=14.5 min CN=91 Area=7.390 ac Runoff= 42.72 cfs 4.016 af

Subcatchment 8c: CONVENTION CENTER
Tc=8.2 min CN=93 Area=11.270 ac Runoff= 79.20 cfs 6.322 af

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING
Tc=7.4 min CN=93 Area=6.740 ac Runoff= 48.62 cfs 3.782 af

Subcatchment 10S: area near trailer road
Tc=50.3 min CN=80 Area=11.560 ac Runoff= 32.91 cfs 5.035 af

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE
Tc=3.4 min CN=92 Area=5.000 ac Runoff= 40.70 cfs 2.765 af

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI
Tc=8.0 min CN=86 Area=6.770 ac Runoff= 44.50 cfs 3.374 af

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD
Tc=7.1 min CN=90 Area=5.010 ac Runoff= 35.52 cfs 2.682 af

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS
Tc=14.0 min CN=86 Area=7.960 ac Runoff= 43.93 cfs 3.962 af

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)
Tc=7.2 min CN=93 Area=7.350 ac Runoff= 53.35 cfs 4.124 af

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL
Tc=7.6 min CN=94 Area=7.230 ac Runoff= 52.20 cfs 4.114 af

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST
Tc=17.3 min CN=84 Area=3.870 ac Runoff= 19.17 cfs 1.851 af

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT
Tc=19.4 min CN=81 Area=12.680 ac Runoff= 57.31 cfs 5.696 af

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT
Tc=44.5 min CN=84 Area=9.020 ac Runoff= 29.35 cfs 4.282 af

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD
Tc=5.9 min CN=88 Area=0.700 ac Runoff= 5.00 cfs 0.362 af

Subcatchment 21L: AREA NEAR SERVICE STATION
Tc=3.8 min CN=84 Area=2.680 ac Runoff= 19.63 cfs 1.286 af

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE
Tc=12.1 min CN=87 Area=2.110 ac Runoff= 12.45 cfs 1.070 af

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL
Tc=13.0 min CN=72 Area=9.860 ac Runoff= 42.86 cfs 3.597 af

Subcatchment 24S: RESEARCH AND DEVELOPMENT
Tc=21.8 min CN=86 Area=10.130 ac Runoff= 47.12 cfs 5.033 af

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES
Tc=39.9 min CN=81 Area=10.650 ac Runoff= 34.86 cfs 4.755 af

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE
Tc=84.9 min CN=72 Area=13.750 ac Runoff= 23.97 cfs 4.889 af

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2
Tc=85.7 min CN=73 Area=13.620 ac Runoff= 24.08 cfs 4.967 af

Subcatchment 29S: CORPORATE RESIDENCE
Tc=59.6 min CN=86 Area=30.270 ac Runoff= 86.37 cfs 14.886 af

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL
Tc=7.1 min CN=88 Area=7.990 ac Runoff= 55.43 cfs 4.132 af

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END
Tc=20.6 min CN=79 Area=7.500 ac Runoff= 31.84 cfs 3.225 af

Subcatchment 32S: NORTH WEST PORTION OF SITE
Tc=38.4 min CN=76 Area=8.770 ac Runoff= 26.55 cfs 3.501 af

Subcatchment 33S: NORTH CONER OF SITE
Tc=29.0 min CN=86 Area=21.150 ac Runoff= 87.03 cfs 10.488 af

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=21.0 min CN=98 Area=3.960 ac Runoff= 20.78 cfs 2.357 af

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND
Tc=20.3 min CN=90 Area=15.060 ac Runoff= 75.86 cfs 8.042 af

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS
Tc=6.3 min CN=92 Area=4.740 ac Runoff= 34.95 cfs 2.620 af

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG
Tc=13.2 min CN=82 Area=4.710 ac Runoff= 24.94 cfs 2.165 af

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT
Tc=14.7 min CN=79 Area=13.810 ac Runoff= 67.00 cfs 5.948 af

Subcatchment 119L:
Tc=24.6 min CN=85 Area=8.080 ac Runoff= 35.22 cfs 3.935 af

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL
Tc=4.9 min CN=90 Area=4.030 ac Runoff= 30.38 cfs 2.158 af

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL
Tc=15.4 min CN=72 Area=5.920 ac Runoff= 24.32 cfs 2.158 af

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD
Tc=12.4 min CN=80 Area=12.310 ac Runoff= 64.68 cfs 5.423 af

Subcatchment 200S: area along 207
Tc=38.4 min CN=75 Area=9.240 ac Runoff= 27.38 cfs 3.602 af

Subcatchment 213S: OFFICE ON AVENUE OF AMERICAS
Tc=5.8 min CN=91 Area=4.560 ac Runoff= 33.69 cfs 2.482 af

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET
Tc=15.2 min CN=80 Area=5.160 ac Runoff= 25.21 cfs 2.272 af

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL
Tc=3.4 min CN=94 Area=1.450 ac Runoff= 11.98 cfs 0.825 af

Subcatchment 230S: EDUCATION AND HOTELS AND REST
Tc=5.4 min CN=87 Area=7.290 ac Runoff= 52.01 cfs 3.704 af

Subcatchment 311S: LSI
Tc=22.3 min CN=89 Area=18.110 ac Runoff= 86.71 cfs 9.503 af

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD
Tc=7.4 min CN=88 Area=6.270 ac Runoff= 43.10 cfs 3.242 af

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE
Tc=3.5 min CN=91 Area=4.640 ac Runoff= 37.34 cfs 2.526 af

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD
Tc=6.2 min CN=89 Area=4.950 ac Runoff= 35.55 cfs 2.605 af

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL
Tc=33.0 min CN=72 Area=7.950 ac Runoff= 23.64 cfs 2.881 af

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE
Tc=7.7 min CN=88 Area=6.220 ac Runoff= 42.35 cfs 3.216 af

Reach 1R: (new node) Inflow= 72.18 cfs 9.337 af
Length= 416.0' Max Vel= 12.9 fps Capacity= 80.79 cfs Outflow= 72.06 cfs 9.332 af

Reach 2R: (new node) Inflow= 94.60 cfs 21.986 af
Length= 670.0' Max Vel= 13.7 fps Capacity= 118.90 cfs Outflow= 94.56 cfs 21.966 af

Reach 3R: DP3 Inflow= 411.42 cfs 67.111 af
Length= 50.0' Max Vel= 8.3 fps Capacity= 1,521.75 cfs Outflow= 411.42 cfs 67.100 af

Reach 4R: (new node) Inflow= 69.41 cfs 15.999 af
Length= 641.0' Max Vel= 9.8 fps Capacity= 84.14 cfs Outflow= 69.38 cfs 15.980 af

Reach 5R: Inflow= 62.49 cfs 9.096 af
Length= 570.0' Max Vel= 9.7 fps Capacity= 60.37 cfs Outflow= 62.27 cfs 9.085 af

Reach 6R: Inflow= 91.68 cfs 14.781 af
Length= 350.0' Max Vel= 2.6 fps Capacity= 148.76 cfs Outflow= 91.56 cfs 14.744 af

Reach 7R: Inflow= 137.97 cfs 20.692 af
Length= 220.0' Max Vel= 5.1 fps Capacity= 504.53 cfs Outflow= 137.75 cfs 20.675 af

Reach 8R: Inflow= 223.19 cfs 31.163 af
Length= 45.0' Max Vel= 13.6 fps Capacity= 217.33 cfs Outflow= 223.14 cfs 31.161 af

Reach 9R: Inflow= 223.14 cfs 31.161 af
Length= 290.0' Max Vel= 4.7 fps Capacity= 278.93 cfs Outflow= 222.21 cfs 31.125 af

Reach 10R: Inflow= 385.81 cfs 63.676 af
Length= 280.0' Max Vel= 5.5 fps Capacity= 316.14 cfs Outflow= 384.87 cfs 63.610 af

Reach 11R: Inflow= 57.06 cfs 9.076 af
Length= 670.0' Max Vel= 10.1 fps Capacity= 55.41 cfs Outflow= 56.92 cfs 9.065 af

Reach 12R: (new node) Inflow= 20.51 cfs 3.926 af
Length= 612.0' Max Vel= 5.8 fps Capacity= 16.00 cfs Outflow= 16.64 cfs 3.919 af

Reach 12W: Inflow= 113.89 cfs 19.173 af
Length= 213.0' Max Vel= 23.0 fps Capacity= 147.66 cfs Outflow= 113.86 cfs 19.170 af

Reach 15R: Inflow= 40.13 cfs 4.794 af
Length= 22.0' Max Vel= 9.9 fps Capacity= 27.71 cfs Outflow= 27.71 cfs 4.794 af

Reach 16R: Inflow= 29.13 cfs 2.527 af
Length= 390.0' Max Vel= 8.2 fps Capacity= 22.62 cfs Outflow= 22.80 cfs 2.524 af

Reach 17R: Inflow= 5.00 cfs 0.362 af
Length= 465.0' Max Vel= 6.0 fps Capacity= 4.13 cfs Outflow= 4.13 cfs 0.362 af

Reach 21R: Inflow= 23.72 cfs 4.322 af
Length= 640.0' Max Vel= 15.2 fps Capacity= 23.49 cfs Outflow= 23.69 cfs 4.319 af

Reach 22R: Inflow= 20.52 cfs 3.929 af
Length= 396.0' Max Vel= 10.8 fps Capacity= 31.99 cfs Outflow= 20.51 cfs 3.926 af

Reach 27R: Inflow= 44.35 cfs 8.256 af
Length= 360.0' Max Vel= 12.2 fps Capacity= 33.55 cfs Outflow= 33.55 cfs 8.251 af

Reach 29R: Inflow= 350.84 cfs 63.108 af
Length= 1,062.0' Max Vel= 17.9 fps Capacity= 308.18 cfs Outflow= 321.34 cfs 63.031 af

Reach 30R: Inflow= 56.36 cfs 10.869 af
Length= 333.0' Max Vel= 13.8 fps Capacity= 94.33 cfs Outflow= 55.35 cfs 10.864 af

Reach 34R: Inflow= 48.97 cfs 8.337 af
Length= 500.0' Max Vel= 19.2 fps Capacity= 53.05 cfs Outflow= 48.93 cfs 8.333 af

Reach 40R: CHANNEL Inflow= 527.95 cfs 110.207 af
Length= 820.0' Max Vel= 7.4 fps Capacity= 539.62 cfs Outflow= 524.38 cfs 109.961 af

Reach 41R: SWALE Inflow= 46.04 cfs 8.734 af
Length= 890.0' Max Vel= 4.0 fps Capacity= 570.88 cfs Outflow= 45.86 cfs 8.695 af

Reach 42R: SWALE Inflow= 174.78 cfs 38.535 af
Length= 350.0' Max Vel= 5.4 fps Capacity= 1,142.31 cfs Outflow= 174.23 cfs 38.481 af

Reach 43R: Inflow= 145.61 cfs 19.769 af
Length= 255.0' Max Vel= 30.6 fps Capacity= 296.25 cfs Outflow= 145.41 cfs 19.766 af

Reach 44R: Inflow= 24.29 cfs 3.300 af
Length= 467.0' Max Vel= 5.5 fps Capacity= 36.45 cfs Outflow= 24.20 cfs 3.295 af

Reach 45R: Inflow= 0.00 cfs 0.000 af
Length= 126.0' Max Vel= 0.0 fps Capacity= 34.38 cfs Outflow= 0.00 cfs 0.000 af

Reach 46R: Inflow= 0.00 cfs 0.000 af
Length= 377.0' Max Vel= 0.0 fps Capacity= 40.58 cfs Outflow= 0.00 cfs 0.000 af

Reach 47R:
Length= 200.0' Max Vel= 0.0 fps Capacity= 14.00 cfs Outflow= 0.00 cfs 0.000 af

Reach 111x: (new node) Inflow= 98.72 cfs 14.615 af
Length= 1,426.0' Max Vel= 15.2 fps Capacity= 94.33 cfs Outflow= 92.61 cfs 14.592 af

Reach 113R: (new node) Inflow= 35.52 cfs 2.682 af
Length= 416.0' Max Vel= 15.9 fps Capacity= 45.24 cfs Outflow= 34.74 cfs 2.680 af

Reach 118R: Inflow= 25.21 cfs 2.272 af
Length= 400.0' Max Vel= 11.0 fps Capacity= 17.16 cfs Outflow= 17.33 cfs 2.270 af

Reach 119W: Inflow= 35.22 cfs 3.935 af
Length= 461.0' Max Vel= 10.1 fps Capacity= 27.72 cfs Outflow= 27.80 cfs 3.931 af

Reach 121W: (new node) Inflow= 86.25 cfs 15.246 af
Length= 312.0' Max Vel= 23.1 fps Capacity= 160.20 cfs Outflow= 86.17 cfs 15.242 af

Reach 122R: Inflow= 24.32 cfs 2.158 af
Length= 1,462.0' Max Vel= 3.2 fps Capacity= 263.47 cfs Outflow= 21.22 cfs 2.130 af

Reach 123R: (new node) Inflow= 52.24 cfs 5.727 af
Length= 500.0' Max Vel= 14.7 fps Capacity= 64.85 cfs Outflow= 51.98 cfs 5.723 af

Reach 124R: (new node) Inflow= 69.46 cfs 10.564 af
Length= 380.0' Max Vel= 10.8 fps Capacity= 66.70 cfs Outflow= 69.43 cfs 10.557 af

Reach 130W: (new node) Inflow= 73.88 cfs 13.158 af
Length= 511.0' Max Vel= 17.6 fps Capacity= 117.99 cfs Outflow= 73.64 cfs 13.150 af

Reach 134W: (new node) Inflow= 48.75 cfs 7.932 af
Length= 1,000.0' Max Vel= 19.0 fps Capacity= 52.57 cfs Outflow= 48.17 cfs 7.924 af

Reach 136R: (new node) Inflow= 27.18 cfs 5.219 af
Length= 616.0' Max Vel= 17.0 fps Capacity= 53.05 cfs Outflow= 27.16 cfs 5.215 af

Reach 221R: (new node) Inflow= 3.38 cfs 0.780 af
Length= 520.0' Max Vel= 12.0 fps Capacity= 10.60 cfs Outflow= 3.38 cfs 0.779 af

Reach 222W: (new node) Inflow= 3.92 cfs 0.948 af
Length= 900.0' Max Vel= 10.6 fps Capacity= 15.56 cfs Outflow= 3.92 cfs 0.946 af

Reach 225W: (new node) Inflow= 34.86 cfs 4.755 af
Length= 85.0' Max Vel= 11.6 fps Capacity= 31.99 cfs Outflow= 33.49 cfs 4.755 af

Reach 280R: Inflow= 94.55 cfs 21.255 af
Length= 200.0' Max Vel= 2.9 fps Capacity= 559.18 cfs Outflow= 94.46 cfs 21.213 a.

Reach 313R: (new node) Inflow= 126.02 cfs 16.479 af
Length= 350.0' Max Vel= 24.6 fps Capacity= 156.42 cfs Outflow= 125.82 cfs 16.474 af

Reach 320R: (new node) Inflow= 80.51 cfs 11.858 af
Length= 503.0' Max Vel= 15.0 fps Capacity= 94.33 cfs Outflow= 80.36 cfs 11.850 af

Reach 334R: (new node) Inflow= 67.31 cfs 10.874 af
Length= 500.0' Max Vel= 19.2 fps Capacity= 53.05 cfs Outflow= 56.36 cfs 10.869 af

Reach 380R: Inflow= 24.08 cfs 4.967 af
Length= 1,090.0' Max Vel= 2.0 fps Capacity= 559.18 cfs Outflow= 23.69 cfs 4.899 af

Reach 523R: Inflow= 19.17 cfs 1.851 af
Length= 340.0' Max Vel= 5.2 fps Capacity= 5.64 cfs Outflow= 6.03 cfs 1.849 af

Reach 524R: Inflow= 23.97 cfs 3.343 af
Length= 80.0' Max Vel= 5.1 fps Capacity= 3.49 cfs Outflow= 3.68 cfs 2.999 af

Reach 525R: Inflow= 3.68 cfs 2.999 af
Length= 300.0' Max Vel= 3.3 fps Capacity= 11.72 cfs Outflow= 3.60 cfs 2.985 af

Reach 526R: Inflow= 3.60 cfs 2.985 af
Length= 550.0' Max Vel= 2.9 fps Capacity= 18.31 cfs Outflow= 3.56 cfs 2.954 af

Reach 528R: Inflow= 3.56 cfs 2.954 af
Length= 1,330.0' Max Vel= 2.8 fps Capacity= 29.20 cfs Outflow= 3.49 cfs 2.877 af

Reach DP#1: (new node) Inflow= 653.57 cfs 128.344 af
Outflow= 653.57 cfs 128.344 af

Reach DP#2: DESIGN POINT #2 Inflow= 94.46 cfs 21.213 af
Outflow= 94.46 cfs 21.213 af

Pond 1P: EXISTING POND Peak Storage= 160,205 cf Inflow= 609.37 cfs 120.017 af
Primary= 596.17 cfs 119.708 af Outflow= 596.17 cfs 119.708 af

Pond 2x: (new node) Peak Storage= 484,684 cf Inflow= 159.31 cfs 22.634 af
Primary= 55.24 cfs 18.769 af Outflow= 55.24 cfs 18.769 af

Pond 3P: Peak Storage= 7.027 af Inflow= 111.60 cfs 23.929 af
Primary= 94.55 cfs 21.255 af Outflow= 94.55 cfs 21.255 af

Pond 4P: (new node) Peak Storage= 129,887 cf Inflow= 86.37 cfs 14.886 af
Primary= 65.94 cfs 14.141 af Outflow= 65.94 cfs 14.141 af

Pond 5P: det pond Peak Storage= 279,794 cf Inflow= 168.38 cfs 28.235 af
Primary= 154.89 cfs 26.445 af Outflow= 154.89 cfs 26.445 af

Pond 7P: P-LOT DET. POND Peak Storage= 55,275 cf Inflow= 42.72 cfs 4.016 af
Primary= 19.86 cfs 3.828 af Outflow= 19.86 cfs 3.828 af

Pond 8P: (new node) Peak Storage= 56,800 cf Inflow= 52.20 cfs 4.114 af
Primary= 20.52 cfs 3.929 af Outflow= 20.52 cfs 3.929 af

Pond 9P: (new node) Peak Storage= 57,292 cf Inflow= 53.35 cfs 4.124 af
Primary= 20.67 cfs 3.937 af Outflow= 20.67 cfs 3.937 af

Pond 10P: P-LOT SUBSURFACE DET. POND Peak Storage= 49,712 cf Inflow= 48.62 cfs 3.782 af
Primary= 20.12 cfs 3.624 af Outflow= 20.12 cfs 3.624 af

Pond 11P: P-LOT SUBSURFACE DET. POND Peak Storage= 49,527 cf Inflow= 43.93 cfs 3.962 af
Primary= 20.82 cfs 3.815 af Outflow= 20.82 cfs 3.815 af

Pond 12C: P-LOT SUBSURFACE POND Peak Storage= 30,835 cf Inflow= 20.78 cfs 2.357 af
Primary= 11.86 cfs 2.231 af Outflow= 11.86 cfs 2.231 af

Pond 13P: SHARED P-LOT SUBSURFACE DET. POND Peak Storage= 66,568 cf Inflow= 68.60 cfs 5.102 af
Primary= 25.55 cfs 4.919 af Outflow= 25.55 cfs 4.919 af

Pond 14P: P-LOT SUBSURFACE DET.POND Peak Storage= 50,236 cf Inflow= 52.01 cfs 3.704 af
Primary= 20.36 cfs 3.543 af Outflow= 20.36 cfs 3.543 af

Pond 15P: SUB-SURFACE POND Peak Storage= 31,152 cf Inflow= 42.35 cfs 3.216 af
Primary= 23.72 cfs 3.121 af Outflow= 23.72 cfs 3.121 af

Pond 16P: SUBSURFACE STORAGE POND PARKING LOT Peak Storage= 13,046 cf Inflow= 11.98 cfs 0.825 af
Primary= 3.38 cfs 0.780 af Outflow= 3.38 cfs 0.780 af

Pond 17P: Peak Storage= 24,318 cf Inflow= 35.55 cfs 2.605 af
Primary= 19.63 cfs 2.541 af Outflow= 19.63 cfs 2.541 af

Pond 18P: Peak Storage= 72,801 cf Inflow= 64.68 cfs 5.423 af
Primary= 27.18 cfs 5.219 af Outflow= 27.18 cfs 5.219 af

Pond 19x: (new node) Peak Storage= 30,871 cf Inflow= 44.50 cfs 3.374 af
Primary= 24.29 cfs 3.300 af Outflow= 24.29 cfs 3.300 af

Pond 20P: (new node) Peak Storage= 63,087 cf Inflow= 47.12 cfs 5.033 af
Primary= 24.64 cfs 4.842 af Outflow= 24.64 cfs 4.842 af

Pond 22p: p-lot subsurface det. pond Peak Storage= 55,557 cf Inflow= 55.43 cfs 4.132 af
Primary= 22.60 cfs 3.948 af Outflow= 22.60 cfs 3.948 af

Pond 23C: p-lot subsurface det. pond Peak Storage= 21,056 cf Inflow= 12.45 cfs 1.070 af
Primary= 3.92 cfs 0.948 af Outflow= 3.92 cfs 0.948 af

Pond 24C: p-lot subsurface det. pond Peak Storage= 21,147 cf Inflow= 30.38 cfs 2.158 af
Primary= 16.65 cfs 2.095 af Outflow= 16.65 cfs 2.095 af

Pond 25w: SUB-SURFACE PARKING LOT POND Peak Storage= 98,618 cf Inflow= 79.20 cfs 6.322 af
Primary= 25.33 cfs 6.005 af Outflow= 25.33 cfs 6.005 af

Pond 311P: LSI POND Peak Storage= 1.282 af Inflow= 86.71 cfs 9.503 af
Primary= 72.18 cfs 9.337 af Outflow= 72.18 cfs 9.337 af

Runoff Area = 483.310 ac Volume = 230.283 af Average Depth = 5.72"

Subcatchment 1S: AREA NEAR POND

Runoff = 85.08 cfs @ 12.39 hrs, Volume= 10.057 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
9.810	77	Woods, Good, HSG D
2.940	98	Paved parking & roofs
9.700	80	Pasture/grassland/range, Good, HSG D
22.450	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	150	0.0150	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
13.0	670	0.0150	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	820	0.0150	7.9	570.88	**Trap/Vee/Rect Channel Flow,** Bot.W=6.00' D=4.00' Z= 3.0 '/' n= 0.040
29.2	1,640	Total			

Subcatchment 2S: EAST SIDE OF BREUNIG

Runoff = 180.67 cfs @ 12.44 hrs, Volume= 23.776 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
30.980	98	Paved parking & roofs
12.910	74	Pasture/grassland/range, Good, HSG C
43.890	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0260	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	300	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	780	0.0230	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
26.2	2,256	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.0	3,486	Total			

Subcatchment 5S: ne corner of site grass and woodland

Runoff = 62.49 cfs @ 12.65 hrs, Volume= 9.096 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
16.170	74	Pasture/grassland/range, Good, HSG C
0.180	87	Dirt roads, HSG C
8.050	70	Woods, Good, HSG C
0.190	98	Paved parking & roofs
24.590	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	42	0.4286	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
20.7	108	0.0082	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
12.8	488	0.0082	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	500	0.0240	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	117	0.0342	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	298	0.2037	3.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.3	1,553	Total			

Subcatchment 6S: AREA NORTHWEST OF INT OF BREUNIG AND REED TRIANGLE SHAPED

Runoff = 18.33 cfs @ 12.14 hrs, Volume= 1.494 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.200	74	Pasture/grassland/range, Good, HSG C
1.690	98	Paved parking & roofs
2.890	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.8	50	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	425	0.0188	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	625	Total			

Subcatchment 7S: HOTEL EAST SIDE OF AVAIATION AVE

Runoff = 42.72 cfs @ 12.19 hrs, Volume= 4.016 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
2.010	74	>75% Grass cover, Good, HSG C
5.380	98	Paved parking & roofs
7.390	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	190	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	20	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	105	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	320	0.0590	3.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.8	370	0.0216	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.0	520	0.0135	1.7		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.5	1,675	Total			

Subcatchment 8c: CONVENTION CENTER

Runoff = 79.20 cfs @ 12.11 hrs, Volume= 6.322 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
9.070	98	Paved parking & roofs
2.200	74	>75% Grass cover, Good, HSG C
11.270	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.5	50	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.6	970	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	1,170	Total			

Subcatchment 9S: AREA NORTH OF D-POND OFFICE BUILDING

Runoff = 48.62 cfs @ 12.10 hrs, Volume= 3.782 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
5.420	98	Paved parking & roofs
1.320	74	>75% Grass cover, Good, HSG C
6.740	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	582	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	904	Total			

Subcatchment 10S: area near trailer road

Runoff = 32.91 cfs @ 12.68 hrs, Volume= 5.035 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
7.420	77	Woods, Good, HSG D
3.170	80	Pasture/grassland/range, Good, HSG D
0.970	98	Paved parking & roofs
11.560	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.1	150	0.0159	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
9.3	353	0.0159	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.5	713	0.0112	1.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.4	565	0.0085	3.9	77.41	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 3.0 '/' n= 0.040
50.3	1,781	Total			

Subcatchment 11x: 150K OFFICE SOUTH PORTION OF SITE

Runoff = 40.70 cfs @ 12.05 hrs, Volume= 2.765 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.650	98	Paved parking & roofs
1.350	74	Pasture/grassland/range, Good, HSG C
5.000	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.7	300	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	80	0.3300	23.4	421.71	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.00' Z= 3.0 '/' n= 0.040
3.4	530	Total			

Subcatchment 12x: OFFICE NE OF INTERSECTION OF LSI

Runoff = 44.50 cfs @ 12.11 hrs, Volume= 3.374 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
2.940	74	Pasture/grassland/range, Good, HSG C
0.470	70	Woods, Good, HSG C
3.360	98	Paved parking & roofs
6.770	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	150	0.0800	2.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.9	350	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	680	0.0210	2.2		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.0	1,180	Total			

Subcatchment 13S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 35.52 cfs @ 12.10 hrs, Volume= 2.682 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.300	98	Paved parking & roofs
1.710	74	>75% Grass cover, Good, HSG C
5.010	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.9	350	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	65	0.3300	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	306	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	871	Total			

Subcatchment 14S: OFFICE AT INT OF WORLD TRADE WAY AND AMERICAS

Runoff = 43.93 cfs @ 12.19 hrs, Volume= 3.962 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.870	74	Pasture/grassland/range, Good, HSG C
4.090	98	Paved parking & roofs
7.960	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	150	0.0050	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.9	338	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	130	0.0462	4.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.8	585	0.0050	1.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.0	1,203	Total			

Subcatchment 15S: AREA NORTH OF INT OF BILL LARKEN (EDUCATION SITE)

Runoff = 53.35 cfs @ 12.10 hrs, Volume= 4.124 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.500	74	Pasture/grassland/range, Good, HSG C
5.850	98	Paved parking & roofs
7.350	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.0	84	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	168	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	100	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	380	0.0950	4.6		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	88	0.0680	18.8	58.99	**Circular Channel (pipe),** Diam= 24.0" Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
7.2	970	Total			

Subcatchment 16S: NORTHWEST OF AVAIATION AVE HOTEL

Runoff = 52.20 cfs @ 12.11 hrs, Volume= 4.114 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.150	74	>75% Grass cover, Good, HSG C
6.080	98	Paved parking & roofs
7.230	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	115	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	35	0.0100	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	115	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	172	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	0.0430	3.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	35	0.0200	8.4	14.86	**Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.6	947	Total			

Subcatchment 17S: AREA NORTH OF INT OF AVAIATION DR & REED ST

Runoff = 19.17 cfs @ 12.23 hrs, Volume= 1.851 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.560	98	Paved parking & roofs
2.310	74	Pasture/grassland/range, Good, HSG C
3.870	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	32	0.0125	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.4	118	0.0212	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.1	372	0.0212	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	50	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
17.3	572	Total			

Subcatchment 18S: NORTH PORTION OF SITE NEAR BUILING TO EAST OF WWT PLANT

Runoff = 57.31 cfs @ 12.26 hrs, Volume= 5.696 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.580	74	Pasture/grassland/range, Good, HSG C
0.390	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.000	98	Paved parking & roofs
12.680	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.0400	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.8	265	0.1132	5.4		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	280	0.0786	4.5		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.8	570	0.0082	5.3	37.39	**Circular Channel (pipe),** Diam= 36.0" Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.021
1.5	360	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
19.4	1,625	Total			

Subcatchment 19S: ACROSS THE STREET FROM WWT PLANT

Runoff = 29.35 cfs @ 12.59 hrs, Volume= 4.282 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
5.200	74	Pasture/grassland/range, Good, HSG C
3.820	98	Paved parking & roofs
9.020	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	150	0.0063	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
14.5	485	0.0063	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
44.5	635	Total			

Subcatchment 20S: AREA ON RAZ AVENUE NEAR INTERNATIONAL BLVD

Runoff = 5.00 cfs @ 12.09 hrs, Volume= 0.362 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
0.280	74	>75% Grass cover, Good, HSG C
0.420	98	Paved parking & roofs
0.700	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	150	0.1867	0.5		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.6	200	0.0833	5.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	350	Total			

Subcatchment 21L: AREA NEAR SERVICE STATION

Runoff = 19.63 cfs @ 12.06 hrs, Volume= 1.286 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.560	74	Pasture/grassland/range, Good, HSG C
1.120	98	Paved parking & roofs
2.680	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0722	2.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.4	127	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8	653	Total			

Subcatchment 22L: RETAIL SITE AT END OF LONDON AVENUE

Runoff = 12.45 cfs @ 12.16 hrs, Volume= 1.070 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
0.830	74	Pasture/grassland/range, Good, HSG C
0.130	70	Woods, Good, HSG C
1.150	98	Paved parking & roofs
2.110	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	150	0.0649	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.9	312	0.0649	1.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	275	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.1	737	Total			

Subcatchment 23S: SOUTH EAST SIDE OF CENTER HILL

Runoff = 42.86 cfs @ 12.18 hrs, Volume= 3.597 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
2.180	74	Pasture/grassland/range, Good, HSG C
7.310	70	Woods, Good, HSG C
0.370	98	PAVED
9.860	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	54	0.0370	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
6.6	96	0.3125	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	248	0.1734	2.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	1,462	0.0218	6.5	284.76	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 6.0 '/' n= 0.040
13.0	1,860	Total			

Subcatchment 24S: RESEARCH AND DEVELOPMENT

Runoff = 47.12 cfs @ 12.29 hrs, Volume= 5.033 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
2.550	74	Pasture/grassland/range, Good, HSG C
1.990	70	Woods, Good, HSG C
5.590	98	Paved parking & roofs
10.130	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.1116	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	242	0.1116	1.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	883	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.8	1,275	Total			

Subcatchment 25I: NW SIDE OF HILL WITH A PORTION OF CORPORATE RESIDENCES

Runoff = 34.86 cfs @ 12.54 hrs, Volume= 4.755 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.510	70	Woods, Good, HSG C
3.140	98	Paved parking & roofs
10.650	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.4	150	0.0200	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.3	500	0.0700	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	280	0.0930	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	24	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	215	0.1300	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
39.9	1,169	Total			

Subcatchment 27S: AREA THAT DRAINS TO WESTERN PORTION OF SITE

Runoff = 23.97 cfs @ 13.12 hrs, Volume= 4.889 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
9.790	70	Woods, Good, HSG C
0.060	87	Dirt roads, HSG C
3.520	74	Pasture/grassland/range, Good, HSG C
0.380	98	Paved parking & roofs
13.750	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	150	0.0800	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	410	0.0719	1.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
62.0	1,315	0.0050	0.4		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.5	470	0.0139	5.3	210.39	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=2.00' Z= 5.0 '/' n= 0.040
84.9	2,345	Total			

Subcatchment 28S: AREA ALONG WESTERN PORTION OF SITE DRAINING TO DP#2

Runoff = 24.08 cfs @ 13.15 hrs, Volume= 4.967 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
9.040	70	Woods, Good, HSG C
3.620	74	Pasture/grassland/range, Good, HSG C
0.960	98	Paved parking & roofs
13.620	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.4	150	0.0133	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
15.1	1,015	0.0500	1.1		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.2	358	0.0168	0.6		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.4	1,105	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.6	275	0.0030	0.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
85.7	2,903	Total			

Subcatchment 29S: CORPORATE RESIDENCE

Runoff = 86.37 cfs @ 12.78 hrs, Volume= 14.886 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
5.940	74	Pasture/grassland/range, Good, HSG C
7.680	70	Woods, Good, HSG C
16.030	98	Paved parking & roofs
0.620	87	Dirt roads, HSG C
30.270	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.5	150	0.0100	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.5	370	0.0270	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.6	235	0.0940	1.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	175	0.2170	2.3		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	1,010	0.0180	2.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	680	0.0350	3.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	220	0.1640	6.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.9	200	0.0650	3.8		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
59.6	3,040	Total			

Subcatchment 30L: INTERSECTION OF AIRPORT DR OFFICE & HOTEL

Runoff = 55.43 cfs @ 12.10 hrs, Volume= 4.132 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.370	74	Pasture/grassland/range, Good, HSG C
4.620	98	Paved parking & roofs
7.990	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.2	290	0.0414	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	636	0.0722	5.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	376	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	1,452	Total			

Subcatchment 31S: AREA ALONG THE WEST SIDE OF AIRPORT CENTER DR NORTH END

Runoff = 31.84 cfs @ 12.28 hrs, Volume= 3.225 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
5.190	74	Pasture/grassland/range, Good, HSG C
0.680	70	Woods, Good, HSG C
1.630	98	Paved parking & roofs
7.500	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	150	0.0333	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.0	232	0.0776	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	41	0.2927	2.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	263	0.0456	1.5		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.6	686	Total			

Subcatchment 32S: NORTH WEST PORTION OF SITE

Runoff = 26.55 cfs @ 12.52 hrs, Volume= 3.501 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
6.000	74	Pasture/grassland/range, Good, HSG C
1.850	70	Woods, Good, HSG C
0.920	98	Paved parking & roofs
8.770	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	60	0.0670	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
15.1	90	0.0125	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	70	0.0125	0.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	458	0.0066	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	280	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
38.4	958	Total			

Subcatchment 33S: NORTH CONER OF SITE

Runoff = 87.03 cfs @ 12.39 hrs, Volume= 10.488 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
9.810	74	Pasture/grassland/range, Good, HSG C
0.850	70	Woods, Good, HSG C
10.490	98	Paved parking & roofs
21.150	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	150	0.0200	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
2.5	150	0.0200	1.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	36	0.2222	3.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	175	0.0571	1.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	235	0.0225	1.1		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0426	1.4		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	410	0.0050	4.5	306.21	**Trap/Vee/Rect Channel Flow,** Bot.W=5.00' D=4.00' Z= 3.0 '/' n= 0.040
29.0	1,203	Total			

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 20.78 cfs @ 12.27 hrs, Volume= 2.357 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.960	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.1	575	0.0133	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	533	0.0719	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.0	1,258	Total			

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND

Runoff = 75.86 cfs @ 12.27 hrs, Volume= 8.042 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
10.040	98	Paved parking & roofs
5.020	74	>75% Grass cover, Good, HSG C
15.060	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	150	0.1280	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	100	0.1280	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	1,020	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
20.3	1,270	Total			

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS

Runoff = 34.95 cfs @ 12.09 hrs, Volume= 2.620 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.520	98	Paved parking & roofs
1.220	74	Pasture/grassland/range, Good, HSG C
4.740	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.7	450	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	86	0.0233	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	686	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 24.94 cfs @ 12.18 hrs, Volume= 2.165 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 67.00 cfs @ 12.20 hrs, Volume= 5.948 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Subcatchment 34I: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 20.78 cfs @ 12.27 hrs, Volume= 2.357 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.960	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.1	575	0.0133	2.3		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	533	0.0719	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
21.0	1,258	Total			

Subcatchment 112x: RETAIL AND DAYCARE NEAR STORMWATER POND

Runoff = 75.86 cfs @ 12.27 hrs, Volume= 8.042 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
10.040	98	Paved parking & roofs
5.020	74	>75% Grass cover, Good, HSG C
15.060	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	150	0.1280	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	100	0.1280	1.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.9	1,020	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
20.3	1,270	Total			

Subcatchment 113S: OFFICE ON AVENUE OF AMERICAS

Runoff = 34.95 cfs @ 12.09 hrs, Volume= 2.620 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.520	98	Paved parking & roofs
1.220	74	Pasture/grassland/range, Good, HSG C
4.740	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.7	450	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	86	0.0233	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	686	Total			

Subcatchment 117S: AREA SOUTH OF INT OF RAZ & BREUNIG

Runoff = 24.94 cfs @ 12.18 hrs, Volume= 2.165 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.200	74	Pasture/grassland/range, Good, HSG C
1.510	98	Paved parking & roofs
4.710	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	150	0.0333	1.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.1	168	0.0357	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.8	324	0.0062	0.6		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	642	Total			

Subcatchment 118S: NORTH PORTION OF SITE NEAR WWT PLANT

Runoff = 67.00 cfs @ 12.20 hrs, Volume= 5.948 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
8.870	74	Pasture/grassland/range, Good, HSG C
1.540	70	Woods, Good, HSG C
3.400	98	Paved parking & roofs
13.810	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	75	0.0533	0.2		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
3.9	1,067	0.0131	4.5	72.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
2.7	1,000	0.0240	6.1	97.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	200	0.0100	3.9	63.04	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
14.7	2,342	Total			

Subcatchment 119L:

Runoff = 35.22 cfs @ 12.33 hrs, Volume= 3.935 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.290	74	Pasture/grassland/range, Good, HSG C
3.790	98	Paved parking & roofs
8.080	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.2350	0.3		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
19.7	117	0.0109	0.1		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
1.5	67	0.0109	0.7		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	108	0.0370	1.3		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.6	325	Total			

Subcatchment 121L: AREA EAST OF AIRPORT CENTER DRIVE & INTERNATIONAL BLVD HOTEL

Runoff = 30.38 cfs @ 12.07 hrs, Volume= 2.158 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.350	74	>75% Grass cover, Good, HSG C
2.680	98	Paved parking & roofs
4.030	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	150	0.0278	1.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.3	67	0.0278	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	280	0.0786	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	529	0.0340	3.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.9	1,026	Total			

Subcatchment 122S: AREA NORTH EAST SIDE OF HILL

Runoff = 24.32 cfs @ 12.21 hrs, Volume= 2.158 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.340	74	Pasture/grassland/range, Good, HSG C
0.200	87	Dirt roads, HSG C
4.230	70	Woods, Good, HSG C
0.150	98	Paved parking & roofs
5.920	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.1456	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.5	166	0.1456	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	625	0.0100	9.5	56.73	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 4.0 '/' n= 0.011
15.4	941	Total			

Subcatchment 123S: WEST SIDE OF HUDSON VALLEY RD

Runoff = 64.68 cfs @ 12.17 hrs, Volume= 5.423 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
4.710	74	Pasture/grassland/range, Good, HSG C
4.000	70	Woods, Good, HSG C
3.600	98	Paved parking & roofs
12.310	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	80	0.0750	2.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.9	70	0.0857	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.2	200	0.1600	2.8		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	500	0.0100	1.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.3	250	0.1600	15.8	252.16	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
0.8	450	0.0578	9.5	151.56	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
12.4	1,550	Total.			

Subcatchment 200S: area along 207

Runoff = 27.38 cfs @ 12.52 hrs, Volume= 3.602 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
0.310	87	Dirt roads, HSG C
4.900	70	Woods, Good, HSG C
3.110	74	Pasture/grassland/range, Good, HSG C
0.920	98	Paved parking & roofs
9.240	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0273	0.1		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
6.6	326	0.0273	0.8		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	1,680	0.0214	5.8	92.22	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
1.8	650	0.0231	6.0	95.81	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
38.4	2,806	Total			

Subcatchment 213S: OFFICE ON AVENUE OF AMERICAS

Runoff = 33.69 cfs @ 12.08 hrs, Volume= 2.482 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.170	98	Paved parking & roofs
1.390	74	>75% Grass cover, Good, HSG C
4.560	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
3.2	390	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	88	0.0227	3.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.8	628	Total			

Subcatchment 220S: EXISTING DEVELOPMENT WESTERN SIDE OF REED STREET

Runoff = 25.21 cfs @ 12.21 hrs, Volume= 2.272 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.500	98	Paved parking & roofs
2.090	74	>75% Grass cover, Good, HSG C
1.570	70	Woods, Good, HSG C
5.160	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	150	0.1465	0.2		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.8	205	0.1465	1.9		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	190	0.0158	5.0	79.24	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' n= 0.040
15.2	545	Total			

Subcatchment 221S: BUILDING NE OF INTERSECTION OF RAZ AND INTERNATIONAL

Runoff = 11.98 cfs @ 12.05 hrs, Volume= 0.825 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.180	98	Paved parking & roofs
0.270	74	>75% Grass cover, Good, HSG C
1.450	94	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.3	35	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	252	0.0397	4.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	437	Total			

Subcatchment 230S: EDUCATION AND HOTELS AND REST

Runoff = 52.01 cfs @ 12.08 hrs, Volume= 3.704 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.920	98	Paved parking & roofs
3.370	74	>75% Grass cover, Good, HSG C
7.290	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.5	740	0.0568	4.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	446	0.0807	5.8		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	1,336	Total			

Subcatchment 311S: LSI

Runoff = 86.71 cfs @ 12.30 hrs, Volume= 9.503 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
11.570	98	Paved parking & roofs
6.540	74	>75% Grass cover, Good, HSG C
18.110	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	150	0.0300	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
3.4	250	0.0300	1.2		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	1,180	0.0150	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.3	1,580	Total			

Subcatchment 313: OFFICE ON HUDSON VALLEY ROAD

Runoff = 43.10 cfs @ 12.10 hrs, Volume= 3.242 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.710	98	Paved parking & roofs
2.560	74	>75% Grass cover, Good, HSG C
6.270	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	150	0.0100	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	136	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.8	493	0.0500	4.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	375	0.0160	2.6		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	1,154	Total			

Subcatchment 320S: MEDICAL OFFICE SOUTH PORTION OF SITE

Runoff = 37.34 cfs @ 12.05 hrs, Volume= 2.526 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.190	98	Paved parking & roofs
1.450	74	>75% Grass cover, Good, HSG C
4.640	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	150	0.0400	2.1		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	550	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	700	Total			

Subcatchment 413S: OFFICE ON HUDSON VALLEY ROAD

Runoff = 35.55 cfs @ 12.09 hrs, Volume= 2.605 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
1.850	74	>75% Grass cover, Good, HSG C
3.100	98	Paved parking & roofs
4.950	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.6		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
2.3	394	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	189	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	170	0.3333	4.0		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	903	Total			

Subcatchment 434S: AREA WEST SIDE OF AIRPORT DR. 110 HOTEL

Runoff = 23.64 cfs @ 12.46 hrs, Volume= 2.881 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
0.020	87	Dirt roads, HSG C
3.710	70	Woods, Good, HSG C
4.220	74	Pasture/grassland/range, Good, HSG C
7.950	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	150	0.0133	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.7	200	0.0200	0.7		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.7	700	0.2500	2.5		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.3	1,500	0.0400	3.0		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
33.0	2,550	Total			

Subcatchment 513S: OFFICE DEVELOPMENTS CENTER OF SITE

Runoff = 42.35 cfs @ 12.11 hrs, Volume= 3.216 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=8.00"

Area (ac)	CN	Description
3.570	98	Paved parking & roofs
2.650	74	>75% Grass cover, Good, HSG C
6.220	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	150	0.0067	1.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.7	70	0.0067	1.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	510	0.0275	3.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	170	0.0706	5.4		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	465	0.0645	5.2		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	1,365	Total			

Reach 1R: (new node)

Inflow = 72.18 cfs @ 12.44 hrs, Volume= 9.337 af
Outflow = 72.06 cfs @ 12.45 hrs, Volume= 9.332 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.9 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.9 fps, Avg. Travel Time= 1.2 min

Peak Depth= 2.21'
Capacity at bank full= 80.79 cfs
36.0" Diameter Pipe n= 0.012 Length= 416.0' Slope= 0.0125 '/'

Reach 2R: (new node)

Inflow	=	94.60 cfs @	12.50 hrs,	Volume=	21.986 af
Outflow	=	94.56 cfs @	12.52 hrs,	Volume=	21.966 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.7 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 7.3 fps, Avg. Travel Time= 1.5 min

Peak Depth= 2.36'
Capacity at bank full= 118.90 cfs
42.0" Diameter Pipe n= 0.011 Length= 670.0' Slope= 0.0100 '/'

Reach 3R: DP3

Inflow	=	411.42 cfs @	12.52 hrs,	Volume=	67.111 af
Outflow	=	411.42 cfs @	12.53 hrs,	Volume=	67.100 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.3 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 0.3 min

Peak Depth= 2.48'
Capacity at bank full= 1,521.75 cfs
20.00' x 6.00' deep channel, n= 0.040 Length= 50.0' Slope= 0.0200 '/'

Reach 4R: (new node)

Inflow	=	69.41 cfs @	12.49 hrs,	Volume=	15.999 af
Outflow	=	69.38 cfs @	12.52 hrs,	Volume=	15.980 af, Atten= 0%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.8 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 5.2 fps, Avg. Travel Time= 2.0 min

Peak Depth= 2.42'
Capacity at bank full= 84.14 cfs
42.0" Diameter Pipe n= 0.011 Length= 641.0' Slope= 0.0050 '/'

Reach 5R:

Inflow	=	62.49 cfs @	12.65 hrs,	Volume=	9.096 af
Outflow	=	62.27 cfs @	12.68 hrs,	Volume=	9.085 af, Atten= 0%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.7 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 1.9 min

Peak Depth= 2.56'
Capacity at bank full= 60.37 cfs
36.0" Diameter Pipe n= 0.013 Length= 570.0' Slope= 0.0082 '/'

Reach 6R:

Inflow	=	91.68 cfs @	12.46 hrs,	Volume=	14.781 af
Outflow	=	91.56 cfs @	12.52 hrs,	Volume=	14.744 af, Atten= 0%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.6 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 4.5 min

Peak Depth= 2.88'
Capacity at bank full= 148.76 cfs
2.00' x 3.50' deep channel, n= 0.040 Length= 350.0' Slope= 0.0029 '/'
Side Slope Z-value= 3.0 4.0 '/'

Reach 7R:

Inflow	=	137.97 cfs @	12.30 hrs,	Volume=	20.692 af
Outflow	=	137.75 cfs @	12.32 hrs,	Volume=	20.675 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 1.5 min

Peak Depth= 2.37'
Capacity at bank full= 504.53 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 220.0' Slope= 0.0136 '/'
Side Slope Z-value= 4.0 '/'

Reach 8R:

Inflow	=	223.19 cfs @	12.36 hrs,	Volume=	31.163 af
Outflow	=	223.14 cfs @	12.36 hrs,	Volume=	31.161 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.6 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.2 fps, Avg. Travel Time= 0.1 min

Peak Depth= 4.09'
Capacity at bank full= 217.33 cfs
4.00' x 4.00' deep channel, n= 0.011 Length= 45.0' Slope= 0.0069 '/'

Reach 9R:

Inflow = 223.14 cfs @ 12.36 hrs, Volume= 31.161 af
Outflow = 222.21 cfs @ 12.39 hrs, Volume= 31.125 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 2.1 min

Peak Depth= 3.65'
Capacity at bank full= 278.93 cfs
2.00' x 4.00' deep channel, n= 0.040 Length= 290.0' Slope= 0.0069 '/'
Side Slope Z-value= 3.0 '/'

Reach 10R:

Inflow = 385.81 cfs @ 12.50 hrs, Volume= 63.676 af
Outflow = 384.87 cfs @ 12.52 hrs, Volume= 63.610 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 1.8 min

Peak Depth= 4.41'
Capacity at bank full= 316.14 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 280.0' Slope= 0.0065 '/'
Side Slope Z-value= 2.5 2.0 '/'

Reach 11R:

Inflow = 57.06 cfs @ 12.59 hrs, Volume= 9.076 af
Outflow = 56.92 cfs @ 12.63 hrs, Volume= 9.065 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 2.2 min

Peak Depth= 1.70'
Capacity at bank full= 55.41 cfs
A factor of 2.00 has been applied to the supplied storage and discharge data
24.0" Diameter Pipe n= 0.013 Length= 670.0' Slope= 0.0150 '/'

Reach 12R: (new node)

Inflow = 20.51 cfs @ 12.37 hrs, Volume= 3.926 af
Outflow = 16.64 cfs @ 12.25 hrs, Volume= 3.919 af, Atten= 19%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.8 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 3.1 min

Peak Depth= 2.00'
Capacity at bank full= 16.00 cfs
24.0" Diameter Pipe n= 0.013 Length= 612.0' Slope= 0.0050 '/'

Reach 12W:

Inflow	=	113.89 cfs @	12.46 hrs,	Volume=	19.173 af
Outflow	=	113.86 cfs @	12.47 hrs,	Volume=	19.170 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 23.0 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 11.2 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.98'
Capacity at bank full= 147.66 cfs
36.0" Diameter Pipe n= 0.013 Length= 213.0' Slope= 0.0490 '/'

Reach 15R:

Inflow	=	40.13 cfs @	12.15 hrs,	Volume=	4.794 af
Outflow	=	27.71 cfs @	12.10 hrs,	Volume=	4.794 af, Atten= 31%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.9 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 5.0 fps, Avg. Travel Time= 0.1 min

Peak Depth= 2.00'
Capacity at bank full= 27.71 cfs
24.0" Diameter Pipe n= 0.013 Length= 22.0' Slope= 0.0150 '/'

Reach 16R:

Inflow	=	29.13 cfs @	12.18 hrs,	Volume=	2.527 af
Outflow	=	22.80 cfs @	12.15 hrs,	Volume=	2.524 af, Atten= 22%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.2 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.7 fps, Avg. Travel Time= 1.8 min

Peak Depth= 2.00'
Capacity at bank full= 22.62 cfs
24.0" Diameter Pipe n= 0.013 Length= 390.0' Slope= 0.0100 '/'

Reach 17R:

Inflow	=	5.00 cfs @	12.09 hrs,	Volume=	0.362 af
Outflow	=	4.13 cfs @	12.14 hrs,	Volume=	0.362 af, Atten= 17%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 3.0 min

Peak Depth= 1.00'
Capacity at bank full= 4.13 cfs
12.0" Diameter Pipe n= 0.021 Length= 465.0' Slope= 0.0350 '/'

Reach 21R:

Inflow	=	23.72 cfs @	12.31 hrs,	Volume=	4.322 af
Outflow	=	23.69 cfs @	12.34 hrs,	Volume=	4.319 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.2 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 7.7 fps, Avg. Travel Time= 1.4 min

Peak Depth= 1.24'
Capacity at bank full= 23.49 cfs
18.0" Diameter Pipe n= 0.013 Length= 640.0' Slope= 0.0500 '/'

Reach 22R:

Inflow	=	20.52 cfs @	12.36 hrs,	Volume=	3.929 af
Outflow	=	20.51 cfs @	12.37 hrs,	Volume=	3.926 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.8 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.4 fps, Avg. Travel Time= 1.2 min

Peak Depth= 1.17'
Capacity at bank full= 31.99 cfs
24.0" Diameter Pipe n= 0.013 Length= 396.0' Slope= 0.0200 '/'

Reach 27R:

Inflow	=	44.35 cfs @	12.35 hrs,	Volume=	8.256 af
Outflow	=	33.55 cfs @	12.20 hrs,	Volume=	8.251 af, Atten= 24%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.2 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 6.7 fps, Avg. Travel Time= 0.9 min

Peak Depth= 2.00'
Capacity at bank full= 33.55 cfs
24.0" Diameter Pipe n= 0.013 Length= 360.0' Slope= 0.0220 '/'

Reach 29R:

Inflow	=	350.84 cfs @	12.44 hrs,	Volume=	63.108 af
Outflow	=	321.34 cfs @	12.88 hrs,	Volume=	63.031 af, Atten= 8%, Lag= 26.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.9 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 9.8 fps, Avg. Travel Time= 1.8 min

Peak Depth= 5.00'
Capacity at bank full= 308.18 cfs
60.0" Diameter Pipe n= 0.013 Length= 1,062.0' Slope= 0.0140 '/'

Reach 30R:

Inflow	=	56.36 cfs @	13.03 hrs,	Volume=	10.869 af
Outflow	=	55.35 cfs @	13.03 hrs,	Volume=	10.864 af, Atten= 2%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.7 fps, Avg. Travel Time= 0.8 min

Peak Depth= 1.66'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 333.0' Slope= 0.0200 '/'

Reach 34R:

Inflow	=	48.97 cfs @	12.35 hrs,	Volume=	8.337 af
Outflow	=	48.93 cfs @	12.36 hrs,	Volume=	8.333 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 19.2 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 9.2 fps, Avg. Travel Time= 0.9 min

Peak Depth= 1.52'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 500.0' Slope= 0.0550 '/'

Reach 40R: CHANNEL

Inflow	=	527.95 cfs @	12.32 hrs,	Volume=	110.207 af
Outflow	=	524.38 cfs @	12.41 hrs,	Volume=	109.961 af, Atten= 1%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.4 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 3.9 fps, Avg. Travel Time= 3.5 min

Peak Depth= 3.95'
Capacity at bank full= 539.62 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 820.0' Slope= 0.0134 '/'
Side Slope Z-value= 3.0 '/'

Reach 41R: SWALE

Inflow = 46.04 cfs @ 12.41 hrs, Volume= 8.734 af
Outflow = 45.86 cfs @ 12.52 hrs, Volume= 8.695 af, Atten= 0%, Lag= 6.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.0 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 8.0 min

Peak Depth= 1.19'
Capacity at bank full= 570.88 cfs
6.00' x 4.00' deep channel, n= 0.040 Length= 890.0' Slope= 0.0150 '/'
Side Slope Z-value= 3.0 '/'

Reach 42R: SWALE

Inflow = 174.78 cfs @ 12.19 hrs, Volume= 38.535 af
Outflow = 174.23 cfs @ 12.23 hrs, Volume= 38.481 af, Atten= 0%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.4 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.7 fps, Avg. Travel Time= 2.1 min

Peak Depth= 1.74'
Capacity at bank full= 1,142.31 cfs
8.00' x 4.00' deep channel, n= 0.040 Length= 350.0' Slope= 0.0186 '/'
Side Slope Z-value= 6.2 '/'

Reach 43R:

Inflow = 145.61 cfs @ 12.16 hrs, Volume= 19.769 af
Outflow = 145.41 cfs @ 12.17 hrs, Volume= 19.766 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 30.6 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 13.7 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.73'
Capacity at bank full= 296.25 cfs
42.0" Diameter Pipe n= 0.013 Length= 255.0' Slope= 0.0867 '/'

Reach 44R:

Inflow = 24.29 cfs @ 12.27 hrs, Volume= 3.300 af
Outflow = 24.20 cfs @ 12.32 hrs, Volume= 3.295 af, Atten= 0%, Lag= 2.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 3.2 min

Peak Depth= 1.79'
Capacity at bank full= 36.45 cfs
36.0" Diameter Pipe n= 0.021 Length= 467.0' Slope= 0.0078 '/'

Reach 45R:

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 34.38 cfs
30.0" Diameter Pipe n= 0.021 Length= 126.0' Slope= 0.0183 '/'

Reach 46R:

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 40.58 cfs
27.0" Diameter Pipe n= 0.021 Length= 377.0' Slope= 0.0448 '/'

Reach 47R:

Outflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00'
Capacity at bank full= 14.00 cfs
24.0" Diameter Pipe n= 0.021 Length= 200.0' Slope= 0.0100 '/'

Reach 111x: (new node)

Inflow	=	98.72 cfs @	12.06 hrs, Volume=	14.615 af	
Outflow	=	92.61 cfs @	12.12 hrs, Volume=	14.592 af,	Atten= 6%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.2 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 7.7 fps, Avg. Travel Time= 3.1 min

Peak Depth= 2.47'
Capacity at bank full= 94.33 cfs
36.0" Diameter Pipe n= 0.013 Length= 1,426.0' Slope= 0.0200 '/'

Reach 113R: (new node)

Inflow	=	35.52 cfs @	12.10 hrs, Volume=	2.682 af	
Outflow	=	34.74 cfs @	12.11 hrs, Volume=	2.680 af,	Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.9 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.3 fps, Avg. Travel Time= 1.1 min

Peak Depth= 1.33'
Capacity at bank full= 45.24 cfs
24.0" Diameter Pipe n= 0.013 Length= 416.0' Slope= 0.0400 '/'

Reach 118R:

Inflow	=	25.21 cfs @	12.21 hrs, Volume=	2.272 af	
Outflow	=	17.33 cfs @	12.15 hrs, Volume=	2.270 af,	Atten= 31%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 5.2 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.50'
Capacity at bank full= 17.16 cfs
18.0" Diameter Pipe n= 0.013 Length= 400.0' Slope= 0.0267 '/'

Reach 119W:

Inflow	=	35.22 cfs @	12.33 hrs, Volume=	3.935 af	
Outflow	=	27.80 cfs @	12.25 hrs, Volume=	3.931 af,	Atten= 21%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.1 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 1.6 min

Peak Depth= 2.00'
Capacity at bank full= 27.72 cfs
24.0" Diameter Pipe n= 0.013 Length= 461.0' Slope= 0.0150 '/'

Reach 121W: (new node)

Inflow	=	86.25 cfs @	12.46 hrs, Volume=	15.246 af	
Outflow	=	86.17 cfs @	12.46 hrs, Volume=	15.242 af,	Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 23.1 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 11.1 fps, Avg. Travel Time= 0.5 min

Reach 130W: (new node)

Inflow = 73.88 cfs @ 12.47 hrs, Volume= 13.158 af
Outflow = 73.64 cfs @ 12.49 hrs, Volume= 13.150 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.6 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 8.5 fps, Avg. Travel Time= 1.0 min

Peak Depth= 1.72'
Capacity at bank full= 117.99 cfs
36.0" Diameter Pipe n= 0.013 Length= 511.0' Slope= 0.0313 '/'

Reach 134W: (new node)

Inflow = 48.75 cfs @ 12.46 hrs, Volume= 7.932 af
Outflow = 48.17 cfs @ 12.51 hrs, Volume= 7.924 af, Atten= 1%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 19.0 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 9.3 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.51'
Capacity at bank full= 52.57 cfs
24.0" Diameter Pipe n= 0.013 Length= 1,000.0' Slope= 0.0540 '/'

Reach 136R: (new node)

Inflow = 27.18 cfs @ 12.48 hrs, Volume= 5.219 af
Outflow = 27.16 cfs @ 12.50 hrs, Volume= 5.215 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 8.2 fps, Avg. Travel Time= 1.3 min

Peak Depth= 1.01'
Capacity at bank full= 53.05 cfs
24.0" Diameter Pipe n= 0.013 Length= 616.0' Slope= 0.0550 '/'

Reach 221R: (new node)

Inflow = 3.38 cfs @ 12.36 hrs, Volume= 0.780 af
Outflow = 3.38 cfs @ 12.38 hrs, Volume= 0.779 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.0 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 6.2 fps, Avg. Travel Time= 1.4 min

Reach 523R:

Inflow = 19.17 cfs @ 12.23 hrs, Volume= 1.851 af
Outflow = 6.03 cfs @ 14.23 hrs, Volume= 1.849 af, Atten= 69%, Lag= 120.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 1.8 min

Peak Depth= 1.25'
Capacity at bank full= 5.64 cfs
15.0" Diameter Pipe n= 0.021 Length= 340.0' Slope= 0.0199 '/'

Reach 524R:

Inflow = 23.97 cfs @ 12.14 hrs, Volume= 3.343 af
Outflow = 3.68 cfs @ 11.40 hrs, Volume= 2.999 af, Atten= 85%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.0 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.00'
Capacity at bank full= 3.49 cfs
12.0" Diameter Pipe n= 0.021 Length= 80.0' Slope= 0.0250 '/'

Reach 525R:

Inflow = 3.68 cfs @ 11.40 hrs, Volume= 2.999 af
Outflow = 3.60 cfs @ 11.45 hrs, Volume= 2.985 af, Atten= 2%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.3 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.7 fps, Avg. Travel Time= 1.8 min

Peak Depth= 0.76'
Capacity at bank full= 11.72 cfs
24.0" Diameter Pipe n= 0.021 Length= 300.0' Slope= 0.0070 '/'

Reach 526R:

Inflow = 3.60 cfs @ 11.45 hrs, Volume= 2.985 af
Outflow = 3.56 cfs @ 11.55 hrs, Volume= 2.954 af, Atten= 1%, Lag= 6.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 3.8 min

Peak Depth= 0.75'
Capacity at bank full= 18.31 cfs
30.0" Diameter Pipe n= 0.021 Length= 550.0' Slope= 0.0052 '/'

Reach 528R:

Inflow	=	3.56 cfs @	11.55 hrs,	Volume=	2.954 af
Outflow	=	3.49 cfs @	14.60 hrs,	Volume=	2.877 af, Atten= 2%, Lag= 183.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 9.7 min

Peak Depth= 0.70'
Capacity at bank full= 29.20 cfs
36.0" Diameter Pipe n= 0.021 Length= 1,330.0' Slope= 0.0050 '/'

Reach DP#1: (new node)

Inflow	=	653.57 cfs @	12.53 hrs,	Volume=	128.344 af
Outflow	=	653.57 cfs @	12.53 hrs,	Volume=	128.344 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP#2: DESIGN POINT #2

Inflow	=	94.46 cfs @	13.68 hrs,	Volume=	21.213 af
Outflow	=	94.46 cfs @	13.68 hrs,	Volume=	21.213 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: EXISTING POND

Inflow	=	609.37 cfs @	12.41 hrs,	Volume=	120.017 af
Outflow	=	596.17 cfs @	12.52 hrs,	Volume=	119.708 af, Atten= 2%, Lag= 6.6 min
Primary	=	596.17 cfs @	12.52 hrs,	Volume=	119.708 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 393.37' Storage= 160,205 cf
Plug-Flow detention time= 4.8 min calculated for 119.708 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	3,441	0	0
386.00	9,194	9,476	9,476
388.00	16,921	26,115	35,591
390.00	20,674	37,595	73,186
392.00	26,261	46,935	120,121
394.00	32,392	58,653	178,774

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Culvert
- 4=Sharp-Crested Vee/Trap Weir

#	Routing	Invert	Outlet Devices
1	Primary	385.00'	**66.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	385.00'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.84' S= 0.0050 '/' n= 0.013 Cc= 0.900
3	Primary	384.80'	**48.0" x 32.0' long Culvert** Ke= 0.600 Outlet Invert= 384.64' S= 0.0050 '/' n= 0.013 Cc= 0.900
4	Primary	392.00'	**26.6 deg x 10.0' long Sharp-Crested Vee/Trap Weir** C= 2.63

Pond 2x: (new node)

Inflow	=	159.31 cfs @	12.32 hrs,	Volume=	22.634 af
Outflow	=	55.24 cfs @	12.95 hrs,	Volume=	18.769 af, Atten= 65%, Lag= 37.5 min
Primary	=	55.24 cfs @	12.95 hrs,	Volume=	18.769 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 8.97' Storage= 484,684 cf
Plug-Flow detention time= 152.5 min calculated for 18.769 af (83% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	54,014	0	0
8.00	54,014	432,112	432,112

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Primary	2.00'	**30.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 1.75' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 3P:

Inflow	=	111.60 cfs @	13.21 hrs,	Volume=	23.929 af
Outflow	=	94.55 cfs @	13.65 hrs,	Volume=	21.255 af, Atten= 15%, Lag= 26.2 min
Primary	=	94.55 cfs @	13.65 hrs,	Volume=	21.255 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 6.12' Storage= 7.027 af
Plug-Flow detention time= 86.0 min calculated for 21.255 af (89% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
0.00	1.148	0.000	0.000
6.00	1.148	6.888	6.888

Primary OutFlow (Free Discharge)
- 1=Culvert
- 2=Culvert
- 3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= 0.99' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	5.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.5(Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 4P: (new node)

Inflow	=	86.37 cfs @	12.78 hrs,	Volume=	14.886 af
Outflow	=	65.94 cfs @	13.14 hrs,	Volume=	14.141 af, Atten= 24%, Lag= 21.3 min
Primary	=	65.94 cfs @	13.14 hrs,	Volume=	14.141 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 6.50' Storage= 129,887 cf
Plug-Flow detention time= 50.9 min calculated for 14.141 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	19,994	0	0
4.00	19,994	79,976	79,976
6.00	19,994	39,988	119,964

Primary OutFlow (Free Discharge)
└─1=Culvert
└─2=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**6.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -22.00' S= 0.1100 '/' n= 0.013 Cc= 0.900
2	Primary	1.00'	**36.0" x 200.0' long Culvert** Ke= 0.600 Outlet Invert= -21.00' S= 0.1100 '/' n= 0.013 Cc= 0.900

Pond 5P: det pond

Inflow	=	168.38 cfs @	12.51 hrs,	Volume=	28.235 af
Outflow	=	154.89 cfs @	12.74 hrs,	Volume=	26.445 af, Atten= 8%, Lag= 14.2 min
Primary	=	154.89 cfs @	12.74 hrs,	Volume=	26.445 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 6.22' Storage= 279,794 cf
Plug-Flow detention time= 63.9 min calculated for 26.357 af (93% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	44,997	0	0
6.00	44,997	269,982	269,982

Primary OutFlow (Free Discharge)
└─1=Culvert
└─2=Culvert
└─3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	1.00'	**42.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.50' S= 0.0100 '/' n= 0.013 Cc= 0.900
2	Primary	0.00'	**12.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900
3	Primary	4.50'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20

Pond 7P: P-LOT DET. POND

Inflow	=	42.72 cfs @	12.19 hrs,	Volume=	4.016 af
Outflow	=	19.86 cfs @	12.49 hrs,	Volume=	3.828 af, Atten= 54%, Lag= 17.8 min
Primary	=	19.86 cfs @	12.49 hrs,	Volume=	3.828 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.13' Storage= 55,275 cf
Plug-Flow detention time= 68.3 min calculated for 3.828 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 8P: (new node)

Inflow	=	52.20 cfs @	12.11 hrs,	Volume=	4.114 af
Outflow	=	20.52 cfs @	12.36 hrs,	Volume=	3.929 af, Atten= 61%, Lag= 15.2 min
Primary	=	20.52 cfs @	12.36 hrs,	Volume=	3.929 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.22' Storage= 56,800 cf
Plug-Flow detention time= 68.3 min calculated for 3.916 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,622	0	0
4.00	17,622	70,488	70,488

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 9P: (new node)

Inflow	=	53.35 cfs @	12.10 hrs,	Volume=	4.124 af
Outflow	=	20.67 cfs @	12.35 hrs,	Volume=	3.937 af, Atten= 61%, Lag= 15.1 min
Primary	=	20.67 cfs @	12.35 hrs,	Volume=	3.937 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.24' Storage= 57,292 cf
Plug-Flow detention time= 68.4 min calculated for 3.937 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	17,662	0	0
4.00	17,662	70,648	70,648

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 10P: P-LOT SUBSURFACE DET. POND

Inflow	=	48.62 cfs @	12.10 hrs,	Volume=	3.782 af
Outflow	=	20.12 cfs @	12.33 hrs,	Volume=	3.624 af, Atten= 59%, Lag= 13.9 min
Primary	=	20.12 cfs @	12.33 hrs,	Volume=	3.624 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.17' Storage= 49,712 cf
Plug-Flow detention time= 63.1 min calculated for 3.624 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 11P: P-LOT SUBSURFACE DET. POND

Inflow	=	43.93 cfs @	12.19 hrs,	Volume=	3.962 af
Outflow	=	20.82 cfs @	12.48 hrs,	Volume=	3.815 af, Atten= 53%, Lag= 17.3 min
Primary	=	20.82 cfs @	12.48 hrs,	Volume=	3.815 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.15' Storage= 49,527 cf
Plug-Flow detention time= 53.7 min calculated for 3.802 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 560.0' long Culvert** Ke= 0.600 Outlet Invert= -5.60' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 12C: P-LOT SUBSURFACE POND

Inflow	=	20.78 cfs @	12.27 hrs, Volume=	2.357 af
Outflow	=	11.86 cfs @	12.56 hrs, Volume=	2.231 af, Atten= 43%, Lag= 17.3 min
Primary	=	11.86 cfs @	12.56 hrs, Volume=	2.231 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.96' Storage= 30,835 cf
Plug-Flow detention time= 75.8 min calculated for 2.224 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 13P: SHARED P-LOT SUBSURFACE DET. POND

Inflow	=	68.60 cfs @	12.09 hrs, Volume=	5.102 af
Outflow	=	25.55 cfs @	12.34 hrs, Volume=	4.919 af, Atten= 63%, Lag= 14.9 min
Primary	=	25.55 cfs @	12.34 hrs, Volume=	4.919 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 4.24' Storage= 66,568 cf
Plug-Flow detention time= 57.7 min calculated for 4.919 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 14P: P-LOT SUBSURFACE DET.POND

Inflow	=	52.01 cfs @	12.08 hrs,	Volume=	3.704 af
Outflow	=	20.36 cfs @	12.31 hrs,	Volume=	3.543 af, Atten= 61%, Lag= 13.7 min
Primary	=	20.36 cfs @	12.31 hrs,	Volume=	3.543 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.20' Storage= 50,236 cf
Plug-Flow detention time= 61.9 min calculated for 3.543 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 15P: SUB-SURFACE POND

Inflow	=	42.35 cfs @	12.11 hrs,	Volume=	3.216 af
Outflow	=	23.72 cfs @	12.26 hrs,	Volume=	3.121 af, Atten= 44%, Lag= 9.0 min
Primary	=	23.72 cfs @	12.26 hrs,	Volume=	3.121 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.97' Storage= 31,152 cf
Plug-Flow detention time= 40.4 min calculated for 3.121 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= 0.00' S= 0.0000 '/' n= 0.013 Cc= 0.900

Pond 16P: SUBSURFACE STORAGE POND PARKING LOT

Inflow	=	11.98 cfs @	12.05 hrs,	Volume=	0.825 af
Outflow	=	3.38 cfs @	12.36 hrs,	Volume=	0.780 af, Atten= 72%, Lag= 18.3 min
Primary	=	3.38 cfs @	12.36 hrs,	Volume=	0.780 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.66' Storage= 13,046 cf
Plug-Flow detention time= 83.3 min calculated for 0.780 af (94% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**12.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 17P:

Inflow	=	35.55 cfs @	12.09 hrs,	Volume=	2.605 af
Outflow	=	19.63 cfs @	12.22 hrs,	Volume=	2.541 af, Atten= 45%, Lag= 7.9 min
Primary	=	19.63 cfs @	12.22 hrs,	Volume=	2.541 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.10' Storage= 24,318 cf
Plug-Flow detention time= 36.8 min calculated for 2.541 af (98% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 18P:

Inflow	=	64.68 cfs @	12.17 hrs,	Volume=	5.423 af
Outflow	=	27.18 cfs @	12.48 hrs,	Volume=	5.219 af, Atten= 58%, Lag= 18.9 min
Primary	=	27.18 cfs @	12.48 hrs,	Volume=	5.219 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 4.64' Storage= 72,801 cf
Plug-Flow detention time= 54.2 min calculated for 5.219 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 19x: (new node)

Inflow	=	44.50 cfs @	12.11 hrs,	Volume=	3.374 af
Outflow	=	24.29 cfs @	12.27 hrs,	Volume=	3.300 af, Atten= 45%, Lag= 9.6 min
Primary	=	24.29 cfs @	12.27 hrs,	Volume=	3.300 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.93' Storage= 30,871 cf
Plug-Flow detention time= 33.0 min calculated for 3.289 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 20P: (new node)

Inflow	=	47.12 cfs @	12.29 hrs,	Volume=	5.033 af
Outflow	=	24.64 cfs @	12.62 hrs,	Volume=	4.842 af, Atten= 48%, Lag= 19.8 min
Primary	=	24.64 cfs @	12.62 hrs,	Volume=	4.842 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 4.02' Storage= 63,087 cf
Plug-Flow detention time= 56.0 min calculated for 4.825 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 22p: p-lot subsurface det. pond

Inflow	=	55.43 cfs @	12.10 hrs,	Volume=	4.132 af
Outflow	=	22.60 cfs @	12.34 hrs,	Volume=	3.948 af, Atten= 59%, Lag= 14.1 min
Primary	=	22.60 cfs @	12.34 hrs,	Volume=	3.948 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 3.54' Storage= 55,557 cf
Plug-Flow detention time= 62.8 min calculated for 3.948 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 23C: p-lot subsurface det. pond

Inflow	=	12.45 cfs @	12.16 hrs,	Volume=	1.070 af
Outflow	=	3.92 cfs @	12.55 hrs,	Volume=	0.948 af, Atten= 68%, Lag= 23.4 min
Primary	=	3.92 cfs @	12.55 hrs,	Volume=	0.948 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 1.34' Storage= 21,056 cf
Plug-Flow detention time= 123.2 min calculated for 0.945 af (88% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	15,700	0	0
4.00	15,700	62,800	62,800

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**15.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 24C: p-lot subsurface det. pond

Inflow	=	30.38 cfs @	12.07 hrs,	Volume=	2.158 af
Outflow	=	16.65 cfs @	12.20 hrs,	Volume=	2.095 af, Atten= 45%, Lag= 7.6 min
Primary	=	16.65 cfs @	12.20 hrs,	Volume=	2.095 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 2.69' Storage= 21,147 cf
Plug-Flow detention time= 42.1 min calculated for 2.095 af (97% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	7,850	0	0
4.00	7,850	31,400	31,400

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 1.0' long Culvert** Ke= 0.600 Outlet Invert= -0.01' S= 0.0100 '/' n= 0.013 Cc= 0.900

Pond 25w: SUB-SURFACE PARKING LOT POND

Inflow	=	79.20 cfs @	12.11 hrs, Volume=	6.322 af	
Outflow	=	25.33 cfs @	12.44 hrs, Volume=	6.005 af,	Atten= 68%, Lag= 19.9 min
Primary	=	25.33 cfs @	12.44 hrs, Volume=	6.005 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 4.19' Storage= 98,618 cf
Plug-Flow detention time= 79.4 min calculated for 6.005 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	23,550	0	0
4.00	23,550	94,200	94,200

Primary OutFlow (Free Discharge)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	**24.0" x 50.0' long Culvert** Ke= 0.600 Outlet Invert= -0.25' S= 0.0050 '/' n= 0.013 Cc= 0.900

Pond 311P: LSI POND

Inflow	=	86.71 cfs @	12.30 hrs, Volume=	9.503 af	
Outflow	=	72.18 cfs @	12.44 hrs, Volume=	9.337 af,	Atten= 17%, Lag= 8.5 min
Primary	=	72.18 cfs @	12.44 hrs, Volume=	9.337 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 444.51' Storage= 1.282 af
Plug-Flow detention time= 25.7 min calculated for 9.337 af (98% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
439.50	0.000	0.000	0.000
440.00	0.217	0.054	0.054
442.00	0.263	0.480	0.534
444.00	0.313	0.576	1.110
446.00	0.366	0.679	1.789
448.00	0.422	0.788	2.577
450.00	0.479	0.901	3.478

Primary OutFlow (Free Discharge)
- 1=Orifice/Grate
- 2=Orifice/Grate
- 3=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	439.50'	**1.0" Vert. Orifice/Grate** C= 0.600
2	Primary	440.00'	**2.00' x 2.33' Vert. Orifice/Grate** C= 0.600
3	Primary	442.75'	**30.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Annual

WATER QUALITY REPORT

Reporting Year 2013

Presented By

Town of New Windsor

George A. Green, Supervisor

PWS ID#: Riley Road NY3503580

There When You Need Us

We are once again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2013. Over the years we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please remember that we are always available to assist you should you ever have any questions or concerns about your water.

Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. The time and place of regularly scheduled town board meetings may be obtained from the Town Clerk, Deborah Green, at New Windsor Town Hall (845-563-4611).

Where Does My Water Come From?

The Town of New Windsor residents receive their water from a pristine source located in the Catskill Region. The Ashokan Reservoir feeds the Catskill Aqueduct, which delivers water to the New York City water supply system. As the aqueduct passes through the town, two taps on the large pipeline deliver water to two individual filtration plants. Also, in 2012 the town added the St. Anne's Well to the distribution system. The water from the well is chlorinated at the well site, then blends with water in the system and supplies water to a small section of the town. When these supplies are not available, the Silver Stream Reservoir is used as an emergency source. The Town of New Windsor also has the capability to obtain water from the City and the Town of Newburgh in an emergency or drought condition. To learn more about our watershed on the Internet, go to the New York City Dept. of Environmental Protection website at www.nyc.gov/html/dep/html/drinking_water/index.shtml.

Substances That Could Be in Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include: **Microbial Contaminants**; **Inorganic Contaminants**; **Pesticides and Herbicides**; **Organic Chemical Contaminants**; and **Radioactive Contaminants**.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. In order to ensure that tap water is safe to drink, the State and the U.S. EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The State Health Department's and the U.S. FDA's regulations establish limits for contaminants in bottled water which must provide the same protection for public health. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791.

Violation Information

During the period 1/1/2004 - 12/31/2013, we did not monitor for the presence of asbestos in the distribution system. This test is performed once every 9-year period and was overlooked. Upon being notified of this violation by the Environmental Protection Agency, we immediately analyzed our water supply for asbestos. Results of the analysis have been received and properly recorded as required by state and federal law. We do not believe that missing this monitoring requirement had any impact on public health and safety. We have already taken steps to ensure that adequate monitoring and reporting will be performed in the future so that this oversight will not be repeated.

Our water system recently violated a drinking water requirement. Although this was not an emergency, as our customers, you have a right to know what happened. The Town was issued a notice of violation for exceeding its maximum plant capacity of 3.0 million gallons per day at its Riley Road filtration plant during the months of May, June, July, August, and September 2013. While plant capacity was exceeded for this period, all water quality standards were in compliance.

How Is My Water Treated and Purified?

The treatment process consists of a series of steps. First, raw water is drawn from the Ashokan Reservoir via the Catskill Aqueduct, or from the Silver Stream Reservoir during times of aqueduct shutdown. The raw water can then enter one of two filtration plants located at either Riley Road or Stewart Field, where chemicals are then added for coagulation and pH adjustment. At the Riley Road Filter Plant, the addition of these substances cause small particles to adhere to one another (called floc), making them large enough to be captured in sand filters. At this point the water is filtered through layers of fine coal and silicate sand. At the Stewart Field Filter Plant, the large floc particles are captured in a different type of filter using diatomaceous earth (similar to the type of filters used in swimming pools). As smaller suspended particles are removed, turbidity disappears and clear water emerges. Chlorine is then added at both facilities as a precaution against any bacteria that may still be present (we carefully monitor the amount of chlorine, adding the smallest quantity necessary to protect the safety of your water without compromising taste). Finally, caustic soda (used to adjust the final pH and alkalinity) is added at both facilities before the water is pumped to sanitized above-ground storage towers or surface reservoirs and into your home or business. The water from the St. Anne's Well is disinfected with chlorine at the well site and blended with water in the system coming from the Riley Road filtration plant.

How Long Can I Store Drinking Water?

The disinfectant in drinking water will eventually dissipate even in a closed container. If that container housed bacteria prior to filling up with the tap water the bacteria may continue to grow once the disinfectant has dissipated. Some experts believe that water could be stored up to six months before needing to be replaced. Refrigeration will help slow the bacterial growth.

Important Health Information

Some people may be more vulnerable to disease causing microorganisms or pathogens in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice from their health care provider about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium*, Giardia and other microbial pathogens are available from the Safe Drinking Water Hotline at (800) 426-4791.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women, infants, and young children. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing.We are responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800) 426-4791 or at www.epa.gov/safewater/lead.

Facts and Figures

Our water system serves approximately 22,800 customers through 7,357 service connections. The total amount of water produced in 2013 was approx. 1.1 billion gallons. The daily average of water treated and pumped into the distribution system was 3.2 million gallons per day. The 2013 billing rate was $6.19 per 100 cubic feet (748 gallons). The minimum quarterly bill was $37.14.

Questions?

For more information about this report or for any questions relating to your drinking water, please call John P. Egitto, Operations Engineer, at (845) 561-2550 or the Orange County Health Department at (845) 291-2331. You may also contact the New York State Department of Health at (800) 458-1158. The U.S. EPA drinking water Web site (www.epa.gov/safewater) can also provide you with additional information regarding your drinking water.

Source Water Assessment

The New York State (NYS) Department of Health (DOH) has evaluated our water system's susceptibility to contamination under the Source Water Assessment Program (SWAP), and their findings are summarized in the paragraph below. These assessments were created using available information. They estimate only the potential for source water contamination. Elevated susceptibility ratings do not mean that source water contamination has or will occur in our water system. We provide treatment and regular monitoring to ensure the water delivered to consumers meets all applicable standards.

The assessment area for this drinking water source contains some medium rated threats to water quality. First, the watershed contains a large amount of high-density residential land cover, which results in a medium susceptibility for protozoa. Also, there are a number of potential contaminant sources listed in the NYS SWAP database. Of these sources, the most significant threats to drinking water quality are related to a main roadway and its associated businesses.

A copy of the assessment, including a map of the assessment area, can be obtained by contacting John P. Egitto, Operations Engineer, at (845) 561-2550.

Water Conservation Tips

You can play a role in conserving water and saving yourself money in the process by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever you can. It is not hard to conserve water. Here are few tips:

- Only wash full loads of laundry and a full dishwasher.
- Turn off the tap when brushing your teeth.
- Fix leaking faucets, pipes, and toilets. Just a slow drip can waste 15 to 20 gallons a day.
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances. Then check the meter after 15 minutes. If it moved, you have a leak.

Non-detected Contaminants

Following is a list of contaminants that we tested for but did not detect in our water supply.

Inorganics: Antimony, Arsenic, Asbestos, Beryllium, Cadmium, Chromium, Cyanide, Mercury, Selenium, Thallium.

Volatile Organics: Benzene;Bromobenzene; Bromochloromethane; Bromomethane; n-Butylbenzene; sec-Butylbenzene; tert-Butylbenzene; Carbon tetrachloride; Chlorobenzene; Chloroethane; Chloromethane; 2-Chlorotoluene; 4-Chlorotoluene; Dibromomethane; 1,2-Dichlorobenzene; 1,3-Dichlorobenzene; 1,4-Dichlorobenzene; Dichlorodifluoromethane; 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethene; cis-1,2-dichloroethene; trans-1,2-dichloroethene; 1,2-Dichloropropane; 1,3-Dichloropropane; 2,2-Dichloropropane; 1,1-Dichloropropene; cis-1,3-Dichloropropene; trans-1,3-Dichloropropene; Ethylbenzene; Hexachlorobutadiene; Isopropylbenzene; 4-Isopropyltoluene; Methylene chloride; Vinyl chloride; n-Propylbenzene; Styrene; 1,1,1,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethane; Tetrachloroethene; Toluene; 1,2,3-Trichlorobenzene; 1,2,4-Trichlorobenzene; 1,1,1-Trichloroethane; 1,1,2-Trichloroethane; Trichloroethene; Trichlorofluoromethane; 1,2,3-Trichlorpropane; 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; m-Xylene; p-Xylene; o-Xylene; Xylenes,total; MTBE.

SOC Group 1 Chemicals: Alachlor; Aldicarb; Aldicarb sulfone; Aldicarb sulfoxide; Atrazine; Carbofuran; Chlorodane (tech); 1,2-Dibromo-3-chlorpropane; 1,2-Dibromethane (EDB); Endrin; Heptachlor; Heptachlor epoxide; Methoxychlor; PCB 1016; PCB 1221; PCB 1232; PCB 1242; PCB 1248; PCB 1254; PCB 1260; Pentachlorophenol; Toxaphene; bis (2-ethylhexyl) adipate; bis (2-ethylhelyl) phthlate; 2,4,5-TP (Silvex).

SOC Group 2 Chemicals: Aldrin; Benzo(a)pyrene; Butachlor; Carbaryl; Dicamba; Dieldrin; Dinoseb; HCH-gamma (Lindane); Hexachlorobenzene; Hexachlorocyclopentadine; 3-Hydroxycarbofuran; Methomyl; Metolachlor; Oxamyl (Vydate); Pichloram; Propachlor; Simazine; Metribuzin; 2,4-D.

Sampling Results

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The state requires us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES

			Riley Road System			Stewart System			St. Annes Well				
SUBSTANCE (UNIT OF MEASURE)	MCL [MRDL]	MCLG [MRDLG]	DATE SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	DATE SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	DATE SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2	2	03/25/2013	0.0079	NA	04/18/2013	0.0079	NA	03/13/2013	0.0177	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chloride (ppm)	250	NA	3/15/2011	41.4	NA	5/16/2008	7.49	NA	NA	NA	NA	No	Naturally occurring or indicative of road salt contamination
Combined Radium [226 and 228] (pCi/L)	5	0	NA	NA	NA	NA	NA	NA	11/21/2013	1.86	ND–1.86	No	Erosion of natural deposits
Dalapon (ppm)	0.05	NA	NA	NA	NA	04/18/2013	0.001	NA	NA	NA	NA	No	Runoff from herbicide used on rights of way
Fluoride (ppm)	2.2	NA	NA	NA	NA	NA	NA	NA	03/13/2013	0.37	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Gross Alpha Activity [including radium 226 but excluding radon and uranium] (pCi/L)	15	0	NA	NA	NA	NA	NA	NA	11/21/2013	3.93	1.7–3.93	No	Erosion of natural deposits
Haloacetic Acids [HAAs]–Stage 1[1] (ppb)	60	NA	2013 Quarterly	21.7	2.9–37.3	NA	NA	NA	NA	NA	NA	No	By-product of drinking water disinfection needed to kill harmful organisms
Nitrate (ppm)	10	10	03/25/2013	0.12	NA	04/18/2013	0.06	NA	03/13/2013	1.43	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Sodium[2] (ppm)	(see footnote)	NA	3/15/2011	38	NA	5/16/2008	6.44	NA	03/13/2013	15	NA	No	Naturally occurring; Road salt; Water softeners; Animal waste
TTHMs [Total Trihalomethanes]–Stage 1[1] (ppb)	80	NA	2013 Quarterly	44.5	22.6–79	NA	NA	NA	NA	NA	NA	No	By-product of drinking water chlorination needed to kill harmful organisms. TTHMs are formed when source water contains large amounts of organic matter.
Total Coliform Bacteria (# positive samples)	Two or more positive samples	0	08/20/2013	1	NA	NA	NA	NA	NA	NA	NA	No	Naturally present in the environment
Turbidity[3] (NTU)	TT	NA	03/16/2013	0.15	0.04–0.15	04/02/2013	0.63	0.16–0.63	NA	NA	NA	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	TT=95% of samples <0.3 NTU	NA	Continuous	100	NA	Continuous	100	NA	NA	NA	NA	No	Soil runoff
Uranium (ppb)	30	0	NA	NA	NA	NA	NA	NA	11/21/2013	2.52	1.75–2.52	No	Erosion of natural deposits

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	AL	MCLG	DATE SAMPLED	AMOUNT DETECTED (90TH%TILE)	RANGE LOW-HIGH	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	1.3	1.3	2011	0.0549	0.0216–0.0657	0/31	No	Corrosion of household plumbing systems; Erosion of natural deposits; leaching from wood preservatives
Lead (ppb)	15	0	2011	5.7	ND–34.8	1/31	No	Corrosion of household plumbing systems; Erosion of natural deposits

OTHER REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	MCL [MRDL]	MCLG [MRDLG]	Stewart System DATE SAMPLED	Stewart System AMOUNT DETECTED	Stewart System RANGE LOW-HIGH	St. Annes Well DATE SAMPLED	St. Annes Well AMOUNT DETECTED	St. Annes Well RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Nickel (ppb)	100	0	04/18/2013	0.7	NA	03/13/2013	2.5	NA	No	Erosion of natural deposits

[1] During 2013, regulations for TTHMs and HAA5s changed from Stage 1 to Stage 2. The values shown in the table represent Stage 1 compliance monitoring; however, the range of values includes Stage 1, Stage 2, and any Health Department surveillance samples.

[2] Water containing more than 20 ppm of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 ppm of sodium should not be used for drinking by people on moderately restricted sodium diets.

[3] Turbidity is a measure of the cloudiness of the water. It is tested because it is a good indicator of the effectiveness of the filtration system. Our highest single turbidity measurement for the year occurred as indicated in the table above. State regulations require that turbidity must always be below 1 NTU. The regulations require that 95% of the turbidity samples collected have measurements below 0.3 NTU. (Note that TT is dependent upon filtration method: conventional, 0.3 NTU; slow sand, 1.0 NTU; or diatomaceous earth filtration, 1.0 NTU.) Although the month as indicated in the date column above was the month when we had the fewest measurements meeting the treatment technique for turbidity, the levels recorded were within the acceptable range allowed and did not constitute a treatment technique violation.

Definitions

90th percentile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the lead and copper values detected at your water system.

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG as possible.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

Sanitary Sewer Report

New York International Plaza

Redevelopment of the Former Stewart Army Subpost

Town of New Windsor
Orange County, New York

December 6, 2002

THE Chazen COMPANIES

Prepared for:

First Columbia International
Group, L.L.C.
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Latham, New York 12110

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Sanitary Sewer Report

New York International Plaza

Redevelopment of the Former Stewart Army Subpost

Town of New Windsor
Orange County, New York

December 6, 2002

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1.0 EXECUTIVE SUMMARY

The Chazen Companies have been retained by First Columbia International Group L.L.C. to complete a Sanitary Sewer Report for the proposed development of the "New York International Plaza" (formerly Stewart Army Subpost) in the Town of New Windsor, Orange County, New York. The purpose of the report was to determine the capacity of the existing sewer and its ability to handle the proposed development as well as assessing the condition of the infrastructure. This report includes review of record mapping of existing infrastructure, reviewing information obtained from Town personnel concerning historic operation, review of record engineering investigations completed and review of proposed development plans of the area and the associated wastewater generation.

The Stewart Army Subpost (STAS) sewer system was historically owned and operated by the United States Military with construction occurring between 1943 and 1960. The STAS system includes approximately 73,800 feet of vitrified clay sewer ranging from 4-inch to 15-inch diameter, four pump stations and the STAT wastewater treatment plant (WWTP).

Since 1981, 27,480 feet of sewers have been replaced with polyvinylchloride (PVC) and 400 feet of sewers have been slip-lined. In 1992, a 30-inch diversion sewer was installed along Breunig Road. Concurrently, all wastewater from the Stewart International Airport (SIA) was diverted directly to the diversion sewer. Some time after the installation of the 30-inch diversion sewer the Breunig Road pump station was taken out of service with wastewater from the pump station service area discharging directly to the diversion sewer. The three pump stations within the Terrace Housing area are currently being evaluated by an independent agency with the ultimate goal of eliminating two pump stations and upgrading the remaining station to handle all flows from its service area. The STAS WWTP originally received wastewater from STAS, Terrace Housing and SIA. Once the 30-inch diversion sewer was installed, the STAS WWTP only received wastewater from STAS and the Terrace Housing area.

In 1999, the Town of New Windsor obtained approval from the federal government to own, maintain and operate the existing STAS sewer system. The Town incorporated the STAS sewer system into Sewer District No. 20. This included STAS, SIA and the Terrace Housing area. Concurrently with the consolidation of the STAS sewer system into District No. 20, the Town decommissioned the STAS WWTP converting the plant's wet well into a duplex pump station. Prior to being decommissioned, the plant was receiving an average day flow of 455,400 gallons between 1996 and 1998. This volume of wastewater represented flows from STAS and Terrace Housing.

The duplex station installed at the STAS WWTP was designed for an average day flow of 2.75 MGD and 8.25 MGD peak capacity. 500,000 GPD was allocated to the STAS service area.

Currently the STAS sewer system and all of Sewer District No. 20 discharge to the Town's Hudson River WWTP. The Town's WWTP is currently permitted to treat up to 5 MGD with an approved future treatment capacity of 10.2 MGD.

For analysis of the existing system, a possible redevelopment plan identifying uses and size of uses was prepared, totaling 2,515,450 S.F. The uses include hotels; office buildings; retail units; and corporate residences. The average daily wastewater generated within the New York International Plaza, which includes existing commercial and residential development that would remain and the possible development is estimated at 450,708 GPD. This represents less than a two percent decrease in wastewater generated based on the average day flow of 455,400 GPD between 1996 and 1998. During this period no problems with collection and conveyance of wastewater was reported.

For the purpose of this study, an average day wastewater design flow of 500,000 gallons was used to allow for flexibility within the development plan. This design flow would represent less than a ten percent increase in wastewater generated based on the average day flow of 455,400 gallons between 1996 and 1998.

Based on the analysis completed, the existing gravity, pressure sewers and pump station at the former STAS WWTP have sufficient design capacity to handle the design average day flow of 500,000 GPD which includes current uses within the service area and the development of NYIP. The improvements that will be required are limited to sewer that will need to be relocated to allow for placement of specific buildings or sewers that will need to be installed in areas that are currently not developed. Inflow problems that have been identified would be greatly reduced as construction of NYIP proceeds with the elimination of old service connections and separation of any possible cross connections with the drainage system.

2.0 INTRODUCTION

This report documents the investigation and analysis completed for the existing sanitary sewer system located within the Stewart Army Subpost with consideration for possible redevelopment. The purpose of the report was to determine both the condition and capacity of the existing sewer and its ability to collect and convey wastewater from the possible redevelopment of STAS.

The Stewart Army Subpost (STAS) sewer system historically serviced three areas; STAS, the Terrace Housing and Stewart International Airport (SIA). Currently the STAS sewer system no longer services the SIA. The focus of this investigation is on the sewers within the STAS area with limited discussion of portions of the infrastructure within the Terrace Housing area. All sewers located within SIA that no longer discharge to the STAS sewer system were not investigated.

The investigation of the sanitary sewer system included a review of record investigative reports and improvement projects to determine present operating conditions and projected future operating conditions for the system. Criteria outlined in Great Lakes Upper Mississippi River Board of State Public Health & Environmental Managers, "Recommended Standards for Wastewater Facilities", 1997, New York State Department of Environmental Conservation, "Design Standards for Wastewater Treatment Works", 1988 were considered.

The analysis and design completed and documented in this report is intended to be part of the redevelopment of STAS, "New York International Plaza", completed on behalf of First Columbia International Group, L.L.C, with corporate office located in Latham, New York.

3.0 EXISTING SANITARY SEWER SYSTEM

3.1 Existing Sewer District Area and Usage

The STAS sewers were originally privately owned and operated by the United States Military. In 1999 the Town of New Windsor took ownership of the sewer system and consolidated the service area into the Town of New Windsor Sewer District No. 20. This included STAS, Terrace Housing area and SIA.

SIA sewers no longer discharge to the STAS sewer system leaving only the STAS and Terrace Housing area as part of the current service area. The service area consists of a central commercial area within STAS and residential area referred to as Terrace Housing.

District users are charged a sewer rate based on an assigned number of units to each user class which are defined in the Town of New Windsor, Town Code, Chapter 35.

No record information was provided by the Town concerning average day flows from the district, however, a 1998 sewer study of the army sub-post indicated that the STAS and Terrace Housing areas had an average daily flow of 455,400 GPD from 1996 to 1998. Since the completion of the 1998 sewer study, occupancy of the STAS has decreased. There are a few existing commercial properties that are within the STAS sewer service area and are limited to parcels along Avenue of the Americas in addition to the Terrace Housing area. Based on the type and size of the uses in the service area, the existing average day flows are approximately 10,000 GPD for commercial properties and 150,000 GPD for the Terrace Housing. This equates to an estimated current average day wastewater flow of 160,000 gallons.

3.2 Existing Sanitary Sewer Collection Systems

The STAS sewer system was constructed in three phases with the first phase completed in 1945 and the second and third phases completed in 1954 and 1960, respectively. Older sewers were constructed of vitrified clay (VCP) with newer sewers constructed of asbestos cement (ACP) and reinforced concrete (RCP) pipes. A majority of the original sewer pipes have been replaced with polyvinyl chloride (PVC) or cast iron (CIP) pipe to reduce infiltration and inflow (I/I). Record information indicates that there is approximately 73,800 feet of sewer ranging from 4-inch to 15-inch diameter, which includes both 57,180 feet of main lines (gravity and force main) and 16,620 feet of building laterals.

Several studies of the sewer system have been completed. This includes an Infiltration/Inflow Study completed by Phillip J. Clark Engineers in 1981, an

Infiltration/Inflow Study completed by Metcalf and Eddy in 1992 and a Sanitary Sewer System Evaluation Survey completed by Garnett Fleming in 1994.

As a result of these studies, rehabilitation of the sewers was completed to address I/I problems. In 1982 minor rehabilitation was completed that included root removal and sealing joints, breaks and cracks. Additional inspections finally led to major rehabilitation of the sewer system throughout the 1980s which included repairing or replacing damaged lines and manholes. Most of the VCP and ACP sewers were replaced with PVC or CIP sewers. Pipe sliplining was completed on small sections of sewer pipe. Some sewers were relocated with other sections abandoned in-place. Relief sewers were constructed along "A" Street and parallel to Sixth Street (World Trade Way) that relieved surcharging. In total approximately 27,480 feet of sewers were replaced and 400 feet of sewers were sliplined.

In 1992 a 30-inch diversion sewer was installed along Breunig Road. This sewer project allowed for lines within SIA to discharge to the diversion sewer in addition to sewers within the Breunig Road pump station.

The Town was contacted with regards to the extent of any additional rehabilitations implemented. The Town indicated that they have been rehabilitating sewer lines, however, the extent of rehabilitation was not known.

3.3 Existing Sanitary Sewer Pump Stations

The original sewer system contained four pump stations, three within the Terrace Housing area and one along Breunig Road. The Breunig Road pump station was taken off line after 1992 with the construction of a diversion sewer along Breunig Road with wastewater discharging directly to the diversion sewer.

Currently there are four active pump stations within the STAS sewer system including the three within the Terrace Housing area previously mentioned and a duplex station at the former STAS wastewater treatment plant (WWTP). The U.S. Army is currently completing an upgrade to the Terrace Housing pump stations which operate in series. Final upgrades to these three stations include decommissioning two and upgrading the remaining pump station to handle all wastewater flows from the Terrace Housing area. These improvements are planned for completion sometime during 2003.

The duplex pump station at the STAS WWTP was installed at the plant's wet well in 1999. The station was designed for an average day flow of 2.75 MGD and peak flow of 8.25 MGD. This design incorporated both existing wastewater flows from within the STAS area estimated at 500,000 GPD and future service areas for the pump station.

Once all planned improvements within the Terrace Housing area are complete, the STAS sewer system will only have two operating pump stations including the upgraded station within Terrace Housing and the STAS WWTP pump station.

3.4 Existing Wastewater Treatment

All wastewater from the STAS sewer system historically was collected and conveyed to the STAS WWTP. The service area of the WWTP included STAS, Terrace Housing and SIA. With the installation of the 30-inch diversion sewer along Brewing Road in 1992, the service area of the WWTP was decreased to include only STAS and the Terrace Housing with the SIA wastewater discharging directly to the diversion sewer.

In the late 1999, The Town of New Windsor consolidated the STAS system into Sewer District No. 20 and concurrently decommissioned the STAS WWTP converting the plant's wet well into a duplex pump station. Prior to decommissioning, it was determined that the plant was receiving 455,600 GPD of wastewater from 1996 to 1998.

With the decommissioning of the STAS WWTP, all wastewater is currently discharged to the 30-inch diversion sewer through a 16-inch force main and ultimately is conveyed to the Town of New Windsor's WWTP along the Hudson River.

The Town of New Windsor's WWTP is permitted to treat up to 5 MGD with an approval to expand the plant to treat 10.2 MGD.

4.0 PROPOSED SANITARY SEWER SYSTEM

4.1 Proposed Wastewater Generation

The anticipated average daily wastewater generation was calculated using Table 3 of the NYSDEC Design Standards for Wastewater Treatment Works, 1988. Demands were estimated based on proposed facility type and size. From this, the projected wastewater for the proposed facilities was determined as follows:

Use	Building Area		Building Capacity/Use		Hydraulic Loading Rates		Hydraulic Load	
General, Medical, R&D Office	1,215,000	S.F.			0.1	GPD/SF	121,500	GPD
Corporate Housing	233,750	S.F.	275	Units	300	GPD/Unit	82,500	GPD
Production/Warehouse	220,000	S.F.	25	Empl/Shift 3 Shifts/Day	35	GPD/Shift	2,625	GPD
Education	160,000	S.F.			0.3	GPD/SF	48,000	GPD
Retail	90,000	S.F.			0.1	GPD/SF	9,000	GPD
Restaurant	28,000	S.F.	80	Seats	35	GPD/Seat	2,800	GPD
Hotel	466,700	S.F.	718	Rooms	120	GPD/Room	86,160	GPD
Service Station	2,000	S.F.	2	Toilets	400	GPD/Toilet	800	GPD
Convention Center	100,000	S.F.			0.1	GPD/SF	10,000	GPD
Total	2,515,450	S.F.						
						Total	363,385	GPD
						20% Reduction(1)	290,708	GPD

(1) Average Day Flows reduced by 20% in accordance with Environmental Conservation Law.

The average daily flow generated from the redevelopment of STAS is estimated to be 290,708 GPD as tabulated above.

As discussed in Section 3.1, the volume of wastewater generated from the STAS service area as decreased from the measured flow of 455,600 GPD between 1996 and 1998 to the estimated current flow of 160,000 GPD. This decrease is attributed to the vacancy of numerous buildings within STAS.

Based on the estimated existing wastewater flows of 160,000 GPD and the anticipated wastewater flows generated from the redevelopment of STAS of 290,708 GPD, the total anticipated wastewater generated from the service area would be 450,708 GPD. For the purposes of this investigation a design flow of 500,000 GPD was assumed allowing for flexibility within the development scheme initially offered.

This design flow of 500,000 GPD represents less than a ten percent increase in wastewater generated from the measured flows from the service area between 1996 and 1998 at the former STAS WWTP.

4.2 Sewer System Capacity Analysis

The sewer system capacity was analyzed considering conveying pipes, pump station(s) and existing and proposed development utilizing the infrastructure. The available pipe capacities were determined based on pipe slopes and sizes. The capacity analysis is included in Appendix A. Based on the analysis completed the sewer pipes have the ability to convey anticipated flows from both existing uses and the proposed redevelopment plan offered.

It is proposed that all sewage generated from the study area will be discharged to the pump station located at the former STAS WWTP. The STAS WWTP pump station was designed for an average day flow of 2.75 MG and peak day flow of 8.25 MG. The station design incorporated 500,000 GPD for the STAS service area, including Terrace Housing. As such the design flow assumed would not have an adverse impact on its overall operation. The pump station that will remain within the Terrace Housing area will not be impacted due to the development of NYIP.

All wastewater from STAS sewer system is conveyed to the Town's WWTP. The Town WWTP is permitted to treat up to 5 MG of wastewater per day and is currently receiving less than the permitted level. The redevelopment of STAS is projected to generate no more than 500,000 gallons of wastewater on an average day. This volume of wastewater representing less than a ten percent increase from that which was received at the STAS WWTP prior to decommissioning and also is the design flow that was reserved for STAS when the STAS WWTP was converted to a duplex pump station.

4.3 Proposed Sewer System Improvements

Based on the capacity analysis, the existing gravity/pressure sewers and pump station have sufficient design capacity to handle the NYIP in addition to existing development discharging to the system. Any improvements are limited to sewers relocated to allow for placement of specific buildings, installation of additional sewers for areas that are currently not developed or on-site private sewers that would discharge to the municipal system. Suggested sewer system improvements have been provided in Appendix B. Specific detailed design of private on-site sewers for each area of development have not been defined and would be addressed on a site by site basis during design development.

Inflow problems that have been documented will be improved as construction of NYIP proceeds. Sewer services that are discovered during construction will be capped at

existing or proposed R.O.W.s and any suspected cross connections with the site drainage systems discovered during construction will be eliminated.

5.0 CONCLUSION

The Chazen Companies has completed the investigation and analysis of the Stewart Army Subpost sanitary sewer system for the purpose of developing the New York International Plaza, located on the former Stewart Air Base in the Town of New Windsor, Orange County, New York.

The combination of existing and proposed uses yields an average day flow of 465,100 GPD from the service area. This includes an estimated 160,000 GPD from current uses and 290,708 GPD from proposed development. The study examined a maximum average day design flow of 500,000 GPD allowing for flexibility within the development scheme offered.

Utilizing a design average day flow of 500,000 gallons, the sewers and STAS WWTP pump station have the ability to convey existing and anticipated flows from the service area. Improvements that will be required to facilitate development of NYIP would be limited to relocation of existing sewers and construction of new sewers in areas that are not currently developed or serviced.

Based on the investigation and analysis completed and described in this report, adequate facilities are planned to accommodate the development's anticipated conditions.

If you have any questions or comments, or you require further information, please contact this office at (518) 235-8050.

Respectfully Submitted:

Joel M. Bianch, PE
Senior Project Engineer

Reviewed and Approved by:

Joseph M Lanaro SHD

Joseph M. Lanaro, P.E.
Director, Engineering Services

Appendix A
Sewer Capacity Analysis

Appendix A
Sanitary Sewer Reprot
New York International Plaza

PROJECT 30223.00
SEWER RUN FLOW CALCULATIONS

n=0.011
Velocity = Manning's equation

DESIGNATION	RUN	PIPE SIZE (in)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	FLOW (GPM)
A	1	6	0.50	130	0.0846	0.125	9.84	1.93	866.9
	2	6	0.50	135	0.0681	0.125	8.83	1.73	777.8
	3	6	0.50	130	0.0665	0.125	8.73	1.71	768.6
	4	6	0.50	225	0.0517	0.125	7.69	1.51	677.7
	5	8	0.67	330	0.0048	0.167	2.84	0.99	444.8
	6	8	0.67	140	0.005	0.167	2.90	1.01	453.9
	7	10	0.83	260	0.0065	0.208	3.84	2.09	938.5
B	1	6	0.50	90	0.056	0.125	8.01	1.57	705.3
	2	6	0.50	320	0.0361	0.125	6.43	1.26	566.3
	3	6	0.50	175	0.1165	0.125	11.55	2.27	1017.3
	4	6	0.50	250	0.076	0.125	9.33	1.83	821.7
AB	1	10	0.83	370	0.0216	0.208	6.99	3.81	1710.8
	2	10	0.83	90	0.0397	0.208	9.48	5.17	2319.3
	3	10	0.83	195	0.0271	0.208	7.83	4.27	1916.2
	4	10	0.83	235	0.0043	0.208	3.12	1.70	763.3
	5	10	0.83	195	0.0088	0.208	4.46	2.43	1092.0
C*	1	6	0.50	440	0.01	0.125	3.38	0.66	298.1
ABC	1	10	0.83	25	0.054	0.208	11.06	6.03	2705.0
D	1	6	0.50	155	0.0735	0.125	9.17	1.80	808.1
	2	10	0.83	85	0.0701	0.208	12.60	6.87	3081.9
ABCD	1	10	0.83	435	0.008	0.208	4.26	2.32	1041.1
	2	10	0.83	170	0.008	0.208	4.26	2.32	1041.1
	3	10	0.83	220	0.0059	0.208	3.65	1.99	894.1
	4	10	0.83	70	0.014	0.208	5.63	3.07	1377.3
E	1	6	0.50	160	0.0023	0.125	1.62	0.32	142.9
	2	6	0.50	175	0.0036	0.125	2.03	0.40	178.8
	3	6	0.50	90	0.0273	0.125	5.59	1.10	492.5
A-E	1	10	0.83	220	0.0048	0.208	3.30	1.80	806.5
	2	10	0.83	295	0.0024	0.208	2.33	1.27	570.3
F	1	8	0.67	105	0.0607	0.167	10.10	3.52	1581.6
A-F	1	10	0.83	115	0.0045	0.208	3.19	1.74	780.9
	2	10	0.83	175	0.0034	0.208	2.77	1.51	678.7
	3	10	0.83	200	0.004	0.208	3.01	1.64	736.2

The Chazen Companies
December 6, 2002
30223.00

Appendix A
Sanitary Sewer Reprot
New York International Plaza

DESIGNATION	RUN	PIPE SIZE	PIPE SIZE (ft)	PIPE LENGTH (ft)	SLOPE (ft/ft)	HYD. RADIUS (ft)	VELOCITY (ft/sec)	FLOW (cfs)	FLOW (GPM)
G	1	8	0.67	250	0.0387	0.167	8.07	2.81	1262.9
	2	8	0.67	160	0.0579	0.167	9.87	3.44	1544.7
H	1	6	0.50	120	0.0485	0.125	7.30	1.43	642.7
	2	6	0.50	165	0.006	0.125	2.62	0.51	230.9
	3	8	0.67	240	0.0042	0.167	2.66	0.93	416.0
GH	1	8	0.67	235	0.0058	0.167	3.12	1.09	488.9
A-H	1	12	1.00	110	0.0016	0.250	2.15	1.69	757.2
PS1 TOTALS									
J	1	8	0.67	140	0.1338	0.167	15.00	5.23	2348.2
	2	8	0.67	115	0.00088	0.167	1.20	0.42	188.3
	3	8	0.67	155	0.1243	0.167	14.45	5.04	2263.3
PS1-J	1	12	1.00	270	0.0027	0.250	2.79	2.19	983.6
K	1	8	0.67	270	0.0037	0.167	2.49	0.87	390.5
	2	8	0.67	350	0.0064	0.167	3.28	1.14	513.6
	3	8	0.67	300	0.0036	0.167	2.46	0.86	385.2
	4	8	0.67	210	0.0072	0.167	3.48	1.21	544.7
	5	8	0.67	405	0.0036	0.167	2.46	0.86	385.2
	6	8	0.67	260	0.0032	0.167	2.32	0.81	363.1
	7	8	0.67	400	0.01	0.167	4.10	1.43	642.0
	8	8	0.67	280	0.0676	0.167	10.68	3.72	1671.6
	9	8	0.67	265	0.0715	0.167	10.96	3.82	1716.6
	10	8	0.67	240	0.0448	0.167	8.66	3.03	1358.8
L	1	8	0.67	265	0.0277	0.167	6.82	2.38	1068.4
	2	8	0.67	290	0.0572	0.167	9.81	3.42	1535.3
KL	1	8	0.67	150	0.1099	0.167	13.59	4.74	2128.2
	2	8	0.67	120	0.0135	0.167	4.76	1.66	745.9
JKL	1	12	1.00	235	0.0031	0.250	2.99	2.35	1054.0
	2	12	1.00	235	0.0028	0.250	2.84	2.23	1001.7
M	1	8	0.67	220	0.0079	0.167	3.64	1.27	570.6
	2	8	0.67	255	0.0893	0.167	12.25	4.27	1918.4

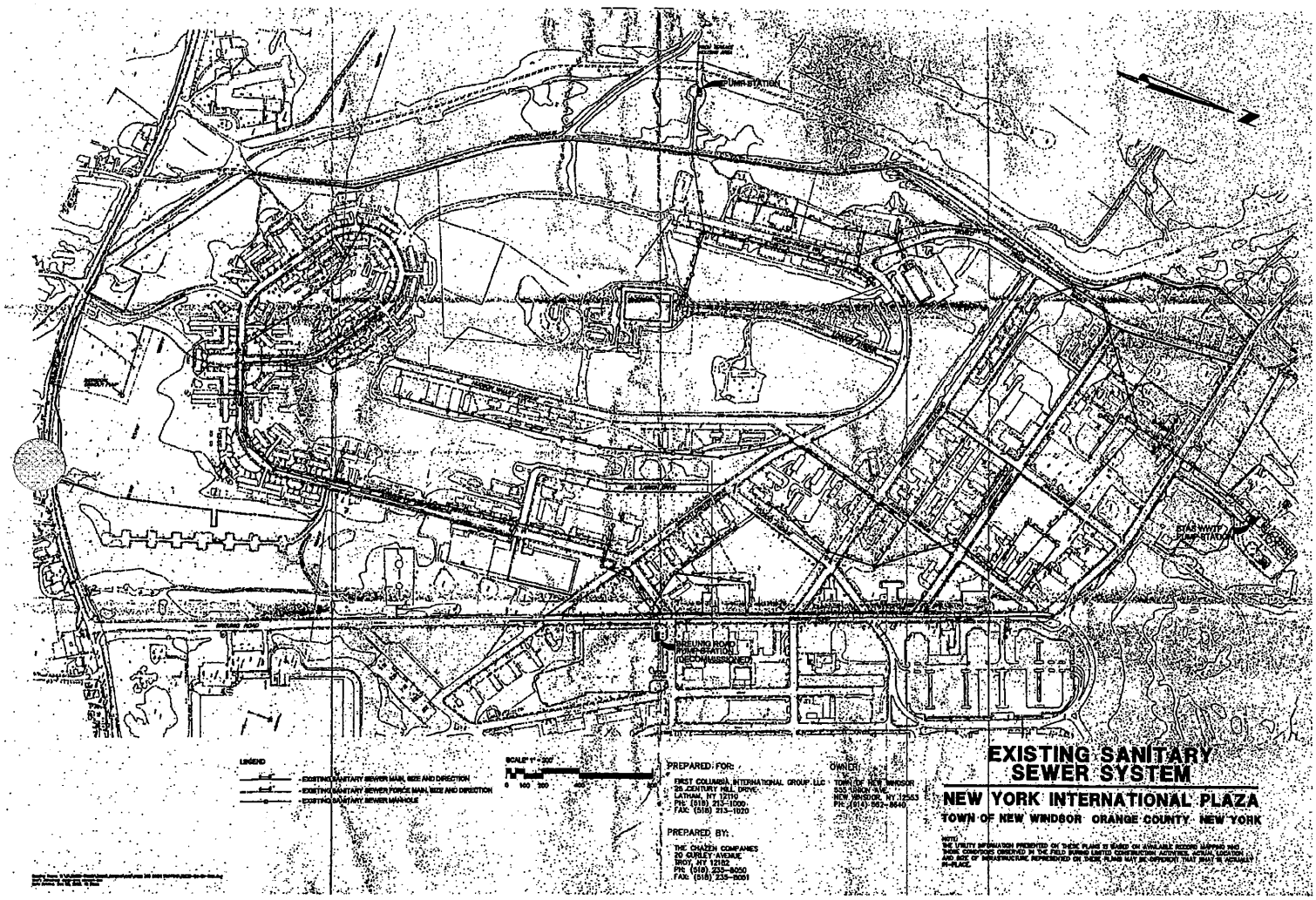
Appendix
Sanitary Sewer Report
New York International Plaza

DESIGNATION	RUN	SIZE	DIA.	LENGTH	SLOPE	ADJUSTED	VELOCITY	DEPTH	FLOW (GPM)
J-M	1	12	1.00	330	0.0031	0.250	2.99	2.35	1054.0
N	1	8	0.67	320	0.0219	0.167	6.07	2.12	950.0
J-N	1	12	1.00	315	0.0027	0.250	2.79	2.19	983.6
O	1	8	0.67	300	0.00026	0.167	0.66	0.23	103.5
	2	8	0.67	85	0.0298	0.167	7.08	2.47	1108.2
P	1	8	0.67	215	0.004	0.167	2.59	0.90	406.0
	2	8	0.67	115	0.0046	0.167	2.78	0.97	435.4
J-P	1	12	1.00	115	0.003	0.250	2.94	2.31	1036.8
	2	12	1.00	820	0.003	0.250	2.94	2.31	1036.8
Q	1	6	0.50	65	0.01	0.125	3.38	0.66	298.1
	2	6	0.50	120	0.01	0.125	3.38	0.66	298.1
	3	6	0.50	155	0.01	0.125	3.38	0.66	298.1
	4	6	0.50	85	0.01	0.125	3.38	0.66	298.1
PS-2									
QPS	1	8	0.67	240	0.0163	0.167	5.23	1.83	819.6
	2	8	0.67	230	0.0075	0.167	3.55	1.24	556.0
	3	8	0.67	390	0.0112	0.167	4.34	1.51	679.4
R	1	8	0.67	120	0.0083	0.167	3.74	1.30	584.9
Q-R	1	8	0.67	215	0.0793	0.167	11.55	4.03	1807.8
S	1	8	0.67	270	0.017	0.167	5.35	1.86	837.0
	2	8	0.67	270	0.0148	0.167	4.99	1.74	781.0
	3	8	0.67	170	0.0138	0.167	4.82	1.68	754.1
Q-S	1	8	0.67	180	0.033	0.167	7.45	2.60	1166.2
T	1	8	0.67	100	0.04	0.167	8.20	2.86	1283.9
Q-T	1	8	0.67	60	0.055	0.167	9.61	3.35	1505.5
	2	8	0.67	200	0.0947	0.167	12.62	4.40	1975.5
	3	8	0.67	295	0.0685	0.167	10.73	3.74	1680.2
	4	8	0.67	220	0.0108	0.167	4.22	1.47	660.9
	5	8	0.67	345	0.0093	0.167	3.95	1.38	619.1

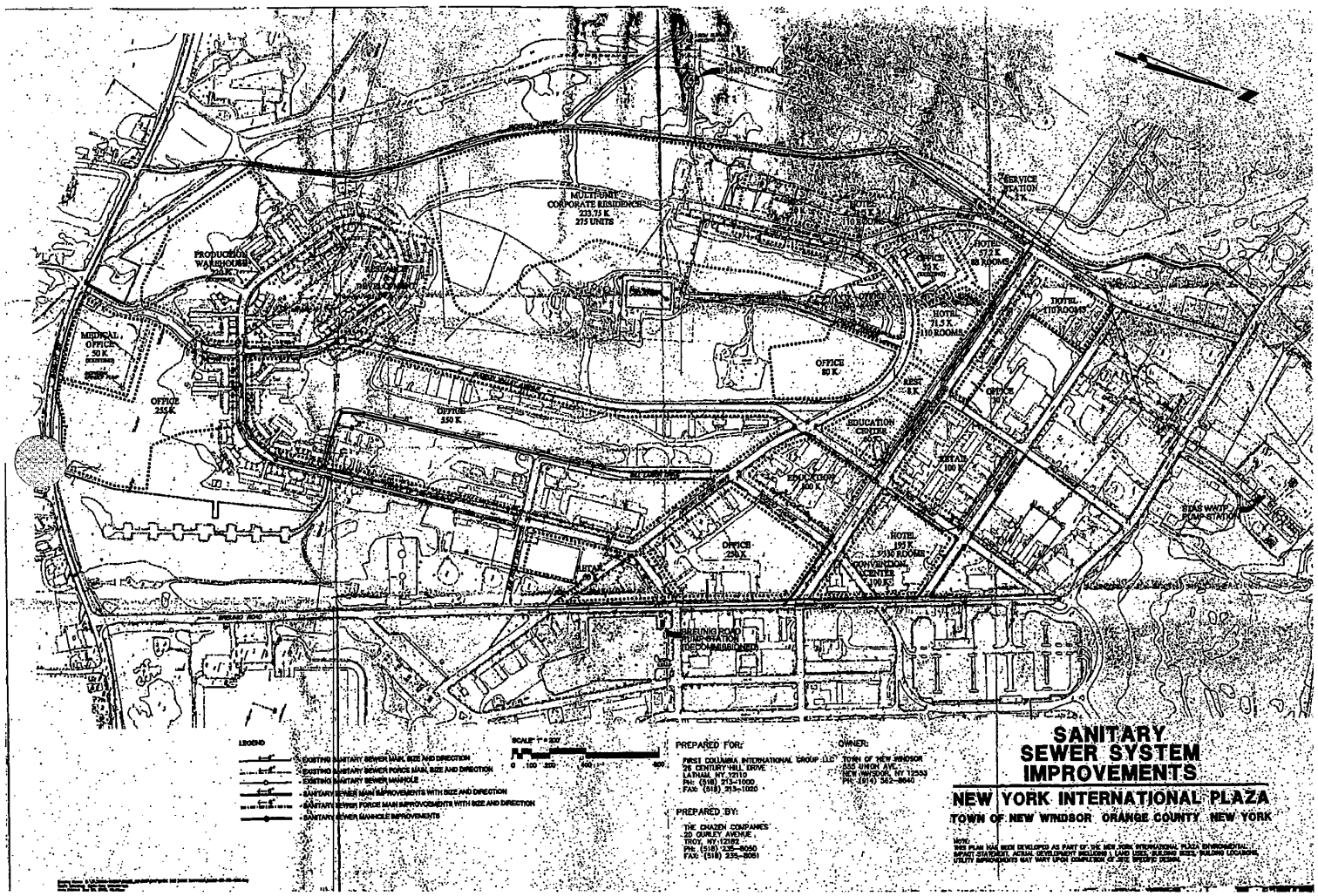
Appendix A
Sanitary Sewer Reprot
New York International Plaza

DESIGNATION	RUN	PIPE SIZE (in)	PIPE SIZE (ft)	PIPE LENGTH (ft)	SLOPE (ft/ft)	HYD. RADIUS (ft)	VELOCITY (ft/sec)	FLOW (cfs)	FLOW (GPM)
U	1	8	0.67	265	0.0123	0.167	4.55	1.59	712.0
	2	8	0.67	220	0.0159	0.167	5.17	1.80	809.5
	3	8	0.67	180	0.1123	0.167	13.74	4.79	2151.3
Q-U	1	8	0.67	185	0.0614	0.167	10.16	3.54	1590.7
	2	8	0.67	130	0.0055	0.167	3.04	1.06	476.1
	3	8	0.67	280	0.0046	0.167	2.78	0.97	435.4
	4	8	0.67	305	0.0892	0.167	12.24	4.27	1917.3
Z	1	8	0.67	90	0.0055	0.167	3.04	1.06	476.1
	2	8	0.67	285	0.0062	0.167	3.23	1.13	505.5
	3	8	0.67	115	0.0244	0.167	6.40	2.23	1002.8
J-U	1	15	1.25	145	0.006	0.313	4.83	5.92	2658.7
V	1	8	0.67	90	0.038	0.167	7.99	2.79	1251.4
	2	8	0.67	155	0.038	0.167	7.99	2.79	1251.4
W	1	8	0.67	60	0.0215	0.167	6.01	2.10	941.3
J-W	1	15	1.25	95	0.0042	0.313	4.04	4.96	2224.5
	2	15	1.25	285	0.0042	0.313	4.04	4.96	2224.5
X	1	8	0.67	380	0.01	0.167	4.10	1.43	642.0
Y	1	8	0.67	2115	0.01	0.167	4.10	1.43	642.0
	2	8	0.67	105	0.01	0.167	4.10	1.43	642.0
	2	8	0.67	80	0.01	0.167	4.10	1.43	642.0
XY	1	8	0.67	710	0.01	0.167	4.10	1.43	642.0
J-XY	1	15	1.25	250	0.01	0.313	6.24	7.65	3432.4

Appendix B
Existing Sanitary Sewer System


PUMP STATION
BREUNIG ROAD PUMP STATION (DECOMMISSIONED)
STAS WWTP PUMP STATION
LEGEND
EXISTING SANITARY SEWER MAIN, SIZE AND DIRECTION
EXISTING SANITARY SEWER FORCE MAIN, SIZE AND DIRECTION
EXISTING SANITARY SEWER MANHOLE
SCALE: 1" = 200'
0 100 200 400 800
PREPARED FOR:
FIRST COLUMBIA INTERNATIONAL GROUP LLC
28 CENTURY HILL DRIVE
LATHAM, NY 12110
PH: (518) 213-1000
FAX: (518) 213-1020
PREPARED BY:
THE CHAZEN COMPANIES
20 GURLEY AVENUE
TROY, NY 12182
PH: (518) 235-8050
FAX: (518) 235-8051
OWNER:
TOWN OF NEW WINDSOR
555 UNION AVE.
NEW WINDSOR, NY 12553
PH: (914) 562-8640
EXISTING SANITARY SEWER SYSTEM
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR ORANGE COUNTY NEW YORK
NOTE:
THE UTILITY INFORMATION PRESENTED ON THESE PLANS IS BASED ON AVAILABLE RECORD MAPPING AND THESE CONDITIONS OBSERVED IN THE FIELD DURING LIMITED CONSTRUCTION ACTIVITIES. ACTUAL LOCATION AND SIZE OF INFRASTRUCTURE REPRESENTED ON THESE PLANS MAY BE DIFFERENT THAT WHAT IS ACTUALLY IN-PLACE.

Appendix C
Sanitary Sewer System Improvements


LEGEND
EXISTING SANITARY SEWER MAIN, SIZE AND DIRECTION
EXISTING SANITARY SEWER FORCE MAIN, SIZE AND DIRECTION
EXISTING SANITARY SEWER MANHOLE
SANITARY SEWER MAIN IMPROVEMENTS WITH SIZE AND DIRECTION
SANITARY SEWER FORCE MAIN IMPROVEMENTS WITH SIZE AND DIRECTION
SANITARY SEWER MANHOLE IMPROVEMENTS
SCALE 1" = 200'
0 100 200 400 600
PREPARED FOR:
FIRST COLUMBIA INTERNATIONAL GROUP LLC
25 CENTURY HILL DRIVE
LATHAM, NY 12110
PH: (518) 213-1000
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OWNER:
TOWN OF NEW WINDSOR
555 UNION AVE.
NEW WINDSOR, NY 12553
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PREPARED BY:
THE CHAZEN COMPANIES
20 GURLEY AVENUE
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PH: (518) 235-8050
FAX: (518) 235-8051
SANITARY
SEWER SYSTEM
IMPROVEMENTS
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR ORANGE COUNTY NEW YORK
NOTE:
THIS PLAN HAS BEEN DEVELOPED AS PART OF THE NEW YORK INTERNATIONAL PLAZA ENVIRONMENTAL IMPACT STATEMENT. ACTUAL DEVELOPMENT INCLUDING LAND USES, BUILDING SIZES, BUILDING LOCATIONS, UTILITY IMPROVEMENTS MAY VARY UPON COMPLETION OF SITE SPECIFIC DESIGN.
PUMP STATION
MULTI-FAMILY CORPORATE RESIDENCES 223.75 K 275 UNITS
PRODUCTION WAREHOUSE 224 K
MEDICAL OFFICE 50 K
OFFICE 255 K
OFFICE 350 K
OFFICE 80 K
HOTEL 71.5 K 110 ROOMS
HOTEL 57.2 K 88 ROOMS
HOTEL 110 ROOMS
SERVICE STATION 7 K
EDUCATION CENTER
RETAIL 100 K
OFFICE 250 K
HOTEL 195 K 300 ROOMS
CONVENTION CENTER 190 K
STAG WWTP PUMP STATION
BROADWAY
BELL CURVE DRIVE
BROAD ROAD
BREWING ROAD PUMP STATION RECOMMENDED

Water Supply Report

New York International Plaza

Redevelopment of the Former Stewart Army Subpost

Town of New Windsor
Orange County, New York

Submitted: December 6, 2002
Revised: April 10, 2003

THE Chazen COMPANIES

Prepared by:

The Capital District Office
The Chazen Companies
20 Gurley Avenue
Troy, New York 12182
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Dutchess County *(845) 454-3980*
New England *(781) 556-1037*
Orange County *(845) 567-1133*
North Country *(518) 812-0513*

Water Supply Report

New York International Plaza

Redevelopment of the Former Stewart Army Subpost

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Submitted: December 6, 2002
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THE Chazen COMPANIES

Prepared for:

First Columbia International Group, L.L.C.
26 Century Hill Drive
Latham, New York 12110

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1.0 EXECUTIVE SUMMARY

The Chazen Companies have been retained by First Columbia International Group L.L.C. to complete a Water Supply Report for the proposed development of the "New York International Plaza" (formerly Stewart Army Subpost, STAS) in the Town of New Windsor, Orange County, New York. The Water Supply Report included review of record mapping of existing infrastructure, reviewing information obtained from Town personnel concerning historic operation, and review of proposed development plans of the area and the associated water supply demands.

The STAS water distribution system was historically owned and operated by the United States Military. Most of the existing water system is comprised of the original STAS infrastructure installed between the 1940s to the 1960s. All original mains are cast iron pipe, a typical practice for the period of system construction. Additionally, the system has a raw water pump station that draws from the Catskill Aqueduct, raw water treatment plant and a 2 million gallon open reservoir. As a military base, the average daily demand was approximately 455,400 GDP (obtained from sanitary sewer treatment records from 1996 to 1998). In 1999 the Town of New Windsor took ownership of the system and consolidated the service area into the Town of New Windsor Water District No. 9. Information provided by the Town of New Windsor for 2001 to 2002 indicated that the district supplies an average of 350,000 gallons per day to the District and some areas of the Town adjacent to District No. 9.

Recent improvements to the distribution system include a new 12-inch class 52 DI main installed along Hudson Valley Avenue, from Avenue of the Americas, connecting to the 20-inch main on Hudson Valley Avenue below the water treatment plant. During the reconstruction of International Blvd. a new 16-inch class 52 DI main was installed. Both mains installed are owned and maintained by the Town of New Windsor.

On January 8, 2003 the Town of New Windsor Town Board adopted a limited water moratorium. The moratorium provided in part, that the Town of New Windsor shall not sign or submit any application to the NYS Dept. of Health for a water main extension (except those required for fire fighting or fire suppression), until necessary NYSDOH approval and bond financing is in place for an expansion to the Riley Rd. Water Filtration Plant to increase the capacity of the plant to 4-6 mgd.

As part of this action, WD#9 (former STAS WTP) water treatment plant will be shutdown and used for emergency purposes only.

For analysis of the existing system, a possible redevelopment plan identifying uses and size of uses was prepared, totaling 2,515,450 S.F. The uses include hotels; office buildings; retail units; and corporate residences. The average daily water demand generated within the New York International Plaza is estimated at 290,708 GPD. Adding the total existing system demand of approximately 350,000 GPD to the proposed NYIP redevelopment demand of 290,708 GPD, yields an approximate future demand of 640,708 GPD. For the purpose of this study, an average day demand for NYIP was assumed to be 350,000 gallons to allow for flexibility within the development plan. This assumed demand results in an approximate future demand for the district of 700,000 GPD. This represents approximately 2.0 times the current average day demands of the district.

Based on the analysis completed, the redevelopment of NYIP will be so sequenced or scheduled such that the available plant capacity will not be exceeded until the plant capacity has been increased or other measures approved by the Town to permit increased water usage. Analysis of the existing water distribution system was modeled using WaterCad and calibrated using twenty-three hydrant flow tests. The redevelopment demands were added to the existing model and resulted that the existing system has sufficient capacity to handle the average day demand of District No. 9 when considering the assumed demand of 350,000 GPD for NYIP. System pressures would be maintained above the allowable minimums when considering the highest building proposed at the highest elevations within NYIP. The model also indicated that pressures would be improved for the two areas by the installation of 12" diameter mains along World Trade Way and Hudson Valley Ave. Other improvements are limited to mains that would need to be relocated due to building locations, and the extension of mains into area not currently serviced.

2.0 INTRODUCTION

This report documents the investigation and analysis completed for the public water supply and distribution system for the redevelopment of the Stewart Army Subpost (STAS) to be known as "New York International Plaza".

The investigation of the water supply and distribution systems included hydrant flow testing and development of a water distribution system model of the system to determine present operating conditions and projected future operating conditions for the system. The model did not consider mains within the Stewart International Airport (SIA) or Terrace Housing area, but did apply a water supply demand to both.

Criteria outlined in Great Lakes Upper Mississippi River Board of State Public Health & Environmental Managers, "Recommended Standards for Water Works", 1997, and New York State Department of Health (NYSDOH), "Rural Water Supply", 1966 were considered.

The analysis and design completed and documented in this report is intended to be part of the redevelopment of STAS, "New York International Plaza", completed on behalf of First Columbia International Group L.L.C, with corporate office located in Latham, New York.

3.0 EXISTING WATER SUPPLY AND DISTRIBUTION SYSTEM

3.1 Existing Water District Area and Usage

The STAS water distribution system was originally privately owned and operated by the United States Military. In 1999 the Town of New Windsor took ownership of the system and consolidated the service area into the Town of New Windsor Water District No. 9. Information provided by the Town of New Windsor for 2001 to 2002 indicated that the district supplies an average of 350,000 gallons per day to the District and some areas of the Town adjacent to the Airport Water District. Previously, as a functioning military base the total daily demand of the district was approximately 455,400 GPD (obtained from sanitary sewer treatment records from 1996 to 1998).

District users are assessed a user fee base upon a bond retirement and operation and maintenance fee. The bond retirement fee is based on assessed property value and is charged at a rate of $4.02 per $1,000 of assessed value. The operation and maintenance fee is established by the Town, which typically accounts for costs associated with system upkeep and supplying water. The Town charges all district users a rate of $3.885 per $1,000 of assessed value.

3.2 Existing Water District Supply

Until recently, the Town of New Windsor Water District No. 9 source was the Catskill Aqueduct located adjacent to the property along the western property line. In January 2003, the Town Board adopted a limited water moratorium, which authorized the WD#9 (former STAS) WTP to be used as a backup facility and all supply to be from the Riley Rd. WTP. The Riley Rd. WTP source is the Catskill Aqueduct.

3.3 Existing Water Treatment

Treatment of raw water, at the Riley Rd. WTP, consists of pre-chlorination, chemical treatment followed by filtration and chlorination. The water plants current permit allows for production of up to 3 million gallons per day. A proposed expansion of the plant will increase capacity to 4-6 million gallons per day. Implementation of the limited moratorium, which prohibits future watermain and district extensions in the Town, allows existing properties located along municipal mains capacity.

3.4 Existing Water District Storage

Information and record plans provided by the Town of New Windsor Water Department indicated that the water district has a 2 million gallon open reservoir, surface elevation of 625-ft (+/-). Appendix A includes mapping of the existing water

system infrastructure. Improvements to the reservoir are currently being made to improve reliability and are expected to be complete during the summer of 2003.

3.5 Existing Water District Distribution System

Most of the existing water system is comprised of the original Stewart Army Subpost (STAS) infrastructure installed between the 1940s to the 1960s. All original mains are cast iron pipe, a typical practice for the period of system construction.

A number of recent improvements have been made to the system. A 20-inch main was extended from the reservoir to First Street, connecting to the Riley Rd. distribution system, to facilitate improved flows to the new airport, manufacturing and commercial development in the late 1980's. Approximately 2,600 L.F. of new 12-inch DIP main was installed on Breunig Road in the 1990's replacing the existing 10-inch pipe. Most recently approximately 2,350 L.F. of 16-inch class 52 DIP main was installed on International Boulevard replacing the existing 8-inch pipe and approximately 2,200 L.F. of new 12-inch class 52 DIP was extended south from the existing 20-inch main crossing Hudson Valley Road to Route 207. This 12-inch main replaces sections of existing 8 and 12-inch main. Hydrants are located along the main at intervals no more than 500 feet apart. All components of the water system are owned and maintained by the Town of New Windsor. A model of the existing water distribution system is included in Appendix C, which was calibrated using hydrant flow test data described in Section 3.6.

3.6 Hydrant Flow Tests

Twenty-three hydrant flow tests were conducted specifically for this project. The results of these flow tests were used to calibrate a model of the existing water distribution system. Friction factors for the pipes between the hydrants were determined from head losses observed and record data provided by the Town. Refer to Appendix B for summary of the hydrant flow test results.

4.0 PROPOSED WATER DISTRIBUTION SYSTEM

4.1 Domestic Demand

The average daily domestic water demand was calculated by correlating water supply and wastewater generation. Using Table 3 of the NYSDEC Design Standards for Wastewater Treatment Works, 1988, demands were estimated based on possible redevelopment plan including various uses and size facilities, totaling 2,515,450-s.f. The redevelopment plan includes: hotels, commercial offices, education facilities, retail, light manufacturing and research and development facilities. From this redevelopment plan, the projected water demand for the proposed facilities served by the water distribution system:

Table 4.1
Developed Conditions Building Uses and Hydraulic Loading

Use	Building Area		Building Capacity/Use		Hydraulic Loading Rates		Hydraulic Load	
General, Medical, R&D Office	1,215,000	S.F.			0.1	GPD/SF	121,500	GPD
Corporate Housing	233,750	S.F.	275	Units	300	GPD/Unit	82,500	GPD
Production/Warehouse	220,000	S.F.	25	Empl/Shift 3 Shifts/Day	35	GPD/Shift	2,625	GPD
Education	160,000	S.F.			0.3	GPD/SF	48,000	GPD
Retail	90,000	S.F.			0.1	GPD/SF	9,000	GPD
Restaurant	28,000	S.F.	80	Seats	35	GPD/Seat	2,800	GPD
Hotel	466,700	S.F.	718	Rooms	120	GPD/Room	86,160	GPD
Service Station	2,000	S.F.	2	Toilets	400	GPD/Toilet	800	GPD
Convention Center	100,000	S.F.			0.1	GPD/SF	10,000	GPD
Total	2,515,450	S.F.						
						Total	363,385	GPD
						20% Reduction[1]	290,708	GPD

(1) A 20% reduction in average day demands is allowed under Environmental Conservation Law.

Therefore, the average daily demand is estimated to be 290,708 GPD.

Adding the total existing system demand of approximately 350,000 GPD to the proposed NYIP redevelopment demand of 290,708 GPD, the approximate future demand yields a conservative total demand of 640,708 GPD.

4.2 Water Distribution System Improvements

The existing system as designed provides sufficient flows at minimum allowable pressures for the redevelopment of the STAS lands. The model indicated that pressures would be improved by the installation of two 12" diameter lines. A new 12" diameter main, connecting International Blvd. and Airport Center Dr. along World Trade Way, would improve pressures for the development of the facilities along World Trade Way. A separate main, connecting the 20" diameter supply line and extending to Airport Center Dr. along Hudson Valley Ave. would improve pressures in the northeast corner of the redevelopment (areas along Aviation Ave. and Breunig Rd.) Other improvements would be limited to the relocation of mains to allow for placement of buildings and extension of water mains to previously undeveloped areas.

The proposed water mains and apparatus will be installed in accordance with the Town of New Windsor Design, Orange County Health Department and Construction Standards for Water Distribution Systems. The proposed layout of the water distribution system would be provided at the site plan level for each project.

5.0 CONCLUSION

The Chazen Companies has completed the investigation and analysis of the Stewart Army Subpost water system for the purpose of developing the New York International Plaza, located on the former Stewart Air Base in the Town of New Windsor, Orange County, New York.

The combination of existing and proposed district users yields an average day demand of 640,708 GPD. This includes the current average day demands for the district of 350,000 GPD and 290,708 GPD from proposed development. The study examined a maximum average day design demand of 350,000 GPD allowing for flexibility within the development scheme offered. This would result in a total district demand of 700,000 GPD, which is greater than the current district demand.

Based on the investigation and analysis completed and described in this report, adequate facilities are planned to accommodate the development's anticipated conditions. The existing system has adequate capacity to deliver the required demands of the buildings proposed at the minimum allowable pressures.

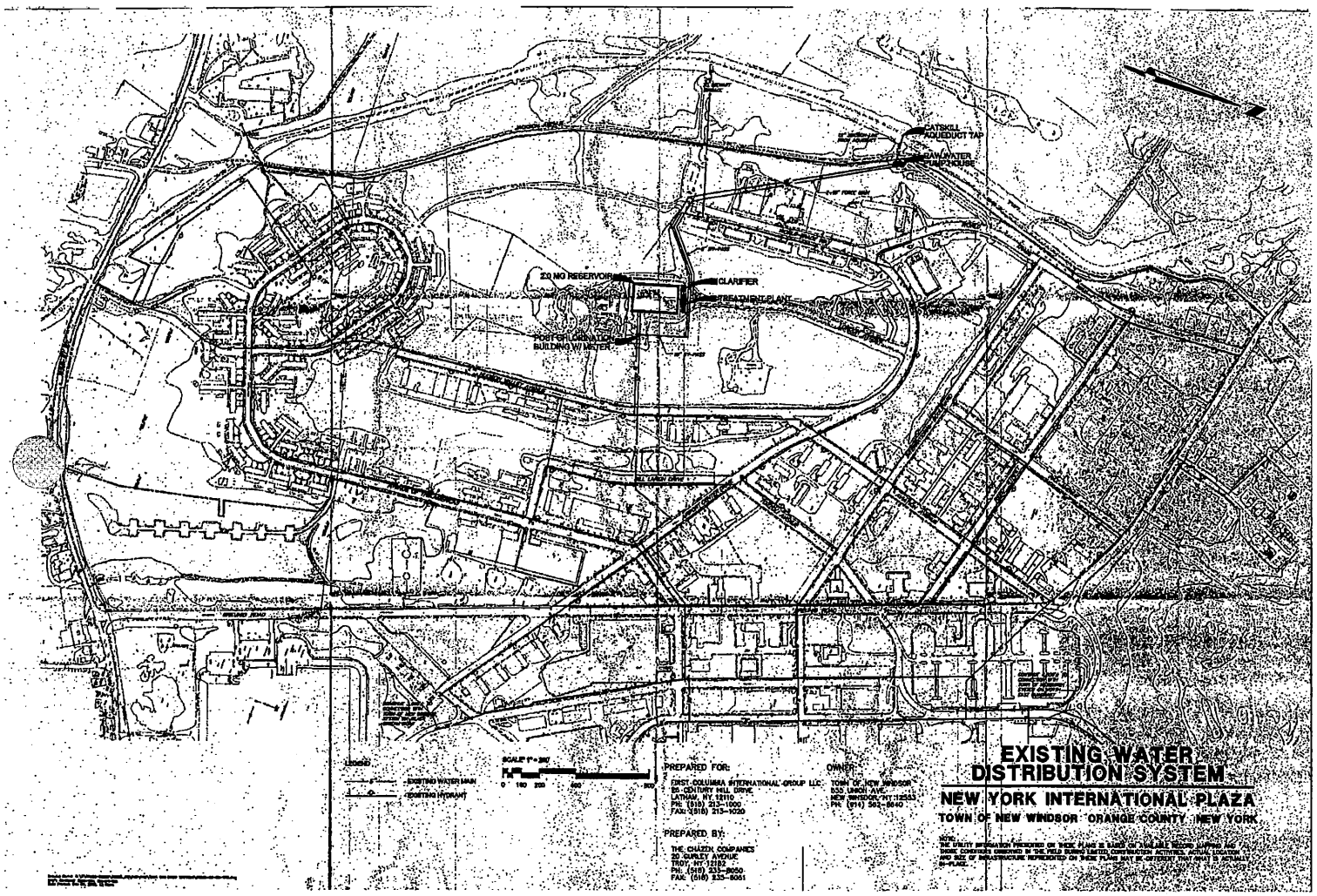
If you have any questions or comments, or you require further information, please contact this office at (518) 235-8050.

Respectfully Submitted:

Joel M. Bianchi, PE
Senior Project Engineer

Reviewed and Approved by:
Joseph M. Lanaro, P.E.
Director, Engineering Services

Appendix A
Existing Water System


CATSKILL AQUEDUCT TAP
RAW WATER PUMP HOUSE
2.0 MG RESERVOIR
CLARIFIER
TREATMENT PLANT
POST CHLORINATION BUILDING W/ METER
LEGEND
EXISTING WATER MAIN
EXISTING HYDRANT
SCALE 1" = 200'
0 100 200 400 800
PREPARED FOR:
FIRST COLUMBIA INTERNATIONAL GROUP LLC
25 CENTURY HILL DRIVE
LATHAM, NY 12110
PH: (518) 213-1000
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OWNER:
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555 UNION AVE.
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PH: (914) 562-8640
EXISTING WATER DISTRIBUTION SYSTEM
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR ORANGE COUNTY NEW YORK
NOTE:
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Scenario: EXISTI SYSTEM 12-3-02
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P1-12"	565.00	12.0	Ductile Iro	35.0	false	0.00	Closed	0.00	625.00	624.97	0.00	0.00
P16-10"	391.00	10.0	Ductile Iro	43.0	false	0.00	Open	-23.08	624.94	624.96	0.02	0.04
P15-10"	290.00	10.0	Ductile Iro	43.0	false	0.00	Open	11.17	624.94	624.94	0.00	0.01
P9-12"	1,390.00	12.0	Ductile Iro	130.0	false	0.00	Open	0.04	624.94	624.94	0.00	0.00
P5-12"	617.00	12.0	Ductile Iro	130.0	false	0.00	Open	-12.76	624.94	624.94	0.00	0.00
P8-12"	131.00	12.0	Ductile Iro	130.0	false	0.00	Open	7.80	624.94	624.94	0.00	0.00
P6-12"	76.00	12.0	Ductile Iro	130.0	false	0.00	Open	0.00	624.94	624.94	0.00	0.00
P-7-8"	107.00	8.0	Ductile Iro	130.0	false	0.00	Open	2.80	624.94	624.94	0.00	0.00
P12-6"	303.00	6.0	Ductile Iro	48.0	false	0.00	Open	0.80	624.94	624.94	0.00	0.00
P30-20"	1,223.00	20.0	Ductile Iro	130.0	false	0.00	Open	-76.00	624.93	624.94	0.00	0.00
P31-20"	42.00	20.0	Ductile Iro	130.0	false	0.00	Open	74.00	624.94	624.94	0.00	0.00
P32-20"	213.00	20.0	Ductile Iro	130.0	false	0.00	Open	74.00	624.94	624.94	0.00	0.00
P-43-8"	566.00	8.0	Ductile Iro	48.0	false	0.00	Open	-0.09	624.94	624.94	0.00	0.00
P-44-8"	835.00	8.0	Ductile Iro	48.0	false	0.00	Open	-0.09	624.94	624.94	0.00	0.00
P40-12"	822.00	12.0	Ductile Iro	130.0	false	0.00	Open	-34.83	624.94	624.94	0.00	0.01
P29-20"	434.00	20.0	Ductile Iro	130.0	false	0.00	Open	150.09	624.94	624.94	0.00	0.01
P45-16"	371.00	16.0	Ductile Iro	130.0	false	0.00	Open	28.56	624.94	624.94	0.00	0.00
P61-8"	199.00	8.0	Ductile Iro	48.0	false	0.00	Open	0.00	624.94	624.94	0.00	0.00
P58-8"	595.00	8.0	Ductile Iro	48.0	false	0.00	Open	1.02	624.94	624.93	0.00	0.00
P55-10"	844.00	10.0	Ductile Iro	43.0	false	0.00	Open	-2.29	624.93	624.94	0.00	0.00
P51-10"	594.00	10.0	Ductile Iro	43.0	false	0.00	Open	-0.39	624.94	624.94	0.00	0.00
P10-8"	44.00	8.0	Ductile Iro	48.0	false	0.00	Open	-3.31	624.94	624.94	0.00	0.00
P27-20"	123.00	20.0	Ductile Iro	130.0	false	0.00	Open	474.30	625.00	624.99	0.01	0.05
P26-10"	270.00	10.0	Ductile Iro	43.0	false	0.00	Open	-28.76	624.98	624.99	0.02	0.07
P60-8"	423.00	8.0	Ductile Iro	48.0	false	0.00	Open	5.67	624.93	624.93	0.00	0.01
P35-8"	60.00	8.0	Ductile Iro	48.0	false	0.00	Open	5.62	624.94	624.94	0.00	0.01
P41-12"	738.00	12.0	Ductile Iro	130.0	false	0.00	Open	6.18	624.94	624.94	0.00	0.00
P42-12"	822.00	12.0	Ductile Iro	130.0	false	0.00	Open	4.27	624.94	624.94	0.00	0.00
P53-10"	85.00	10.0	Ductile Iro	43.0	false	0.00	Open	-4.27	624.94	624.94	0.00	0.00
P56-8"	413.00	8.0	Ductile Iro	48.0	false	0.00	Open	-1.91	624.94	624.94	0.00	0.00
P37-8"	839.00	8.0	Ductile Iro	48.0	false	0.00	Open	4.00	624.94	624.94	0.00	0.00
P38-8"	195.00	8.0	Ductile Iro	48.0	false	0.00	Open	4.00	624.94	624.93	0.00	0.00
P2-12"	379.00	12.0	Ductile Iro	130.0	false	0.00	Open	88.57	624.97	624.98	0.01	0.03
P10-12"	329.00	12.0	Ductile Iro	130.0	false	0.00	Open	-1.29	624.94	624.94	0.00	0.00
P-11-12"	303.00	12.0	Ductile Iro	130.0	false	0.00	Open	-18.85	624.94	624.94	0.00	0.00
P14-8"	2,091.00	8.0	Ductile Iro	48.0	false	0.00	Open	1.59	624.94	624.94	0.00	0.00
P17-12"	1,055.00	12.0	Ductile Iro	35.0	false	0.00	Open	26.25	624.97	624.94	0.04	0.03
P18-8"	498.00	8.0	Ductile Iro	48.0	false	0.00	Open	-0.84	624.94	624.94	0.00	0.00
P20-8"	1,052.00	8.0	Ductile Iro	48.0	false	0.00	Open	-5.49	624.94	624.94	0.01	0.01
P21-8"	636.00	8.0	Ductile Iro	48.0	false	0.00	Open	-3.38	624.94	624.94	0.00	0.00
P22-10"	835.00	10.0	Ductile Iro	43.0	false	0.00	Open	-8.37	624.94	624.94	0.00	0.00
P23-6"	1,313.00	6.0	Ductile Iro	48.0	false	0.00	Open	19.75	624.94	624.83	0.11	0.08
P24-6"	985.00	6.0	Ductile Iro	48.0	false	0.00	Open	-6.75	624.83	624.84	0.01	0.01
P25-6"	828.00	6.0	Ductile Iro	48.0	false	0.00	Open	-28.75	624.84	624.98	0.13	0.16
P33-10"	346.00	10.0	Ductile Iro	43.0	false	0.00	Open	1.67	624.94	624.94	0.00	0.00
P34-10"	848.00	10.0	Ductile Iro	43.0	false	0.00	Open	5.82	624.94	624.94	0.00	0.00
P36-8"	514.00	8.0	Ductile Iro	48.0	false	0.00	Open	-1.32	624.94	624.94	0.00	0.00
P46-16"	457.00	16.0	Ductile Iro	130.0	false	0.00	Open	24.09	624.94	624.94	0.00	0.00
P47-16"	509.00	16.0	Ductile Iro	130.0	false	0.00	Open	21.29	624.94	624.94	0.00	0.00
P48-16"	984.00	16.0	Ductile Iro	130.0	false	0.00	Open	13.37	624.94	624.93	0.00	0.00
P49-8"	843.00	8.0	Ductile Iro	48.0	false	0.00	Open	-2.47	624.94	624.94	0.00	0.00
P50-10"	445.00	10.0	Ductile Iro	43.0	false	0.00	Open	5.24	624.94	624.94	0.00	0.00
P52-10"	533.00	10.0	Ductile Iro	43.0	false	0.00	Open	-1.98	624.94	624.94	0.00	0.00
P54-10"	515.00	10.0	Ductile Iro	43.0	false	0.00	Open	2.29	624.94	624.94	0.00	0.00
P57-6"	511.00	6.0	Ductile Iro	48.0	false	0.00	Open	1.78	624.94	624.93	0.00	0.00
P59-6"	1,210.00	6.0	Ductile Iro	48.0	false	0.00	Open	3.33	624.93	624.93	0.00	0.00
P62-6"	341.00	6.0	Ductile Iro	48.0	false	0.00	Open	0.00	624.94	624.94	0.00	0.00
P63-6"	474.00	6.0	Ductile Iro	48.0	false	0.00	Open	0.00	624.94	624.94	0.00	0.00
P64-6"	1,042.00	6.0	Ductile Iro	48.0	false	0.00	Open	0.00	624.94	624.94	0.00	0.00
P65-6"	525.00	6.0	Ductile Iro	48.0	false	0.00	Open	0.00	624.94	624.94	0.00	0.00
P66-6"	417.00	6.0	Ductile Iro	48.0	false	0.00	Open	0.00	624.94	624.94	0.00	0.00
P39-N-1	28.00	12.0	Ductile Iro	130.0	false	0.00	Open	61.43	624.94	624.94	0.00	0.01
P39-S-1	627.00	12.0	Ductile Iro	130.0	false	0.00	Open	6.85	624.94	624.94	0.00	0.00
P-78	695.00	6.0	Ductile Iro	48.0	false	0.00	Open	-2.60	624.94	624.95	0.01	0.01
P80-12"	972.00	12.0	Ductile Iro	130.0	false	0.00	Open	57.10	624.88	624.95	0.07	0.01
P83-6"	364.00	6.0	Ductile Iro	48.0	false	0.00	Open	4.45	624.95	624.95	0.00	0.01
P82-20"	414.00	20.0	Ductile Iro	130.0	false	0.00	Open	445.56	624.99	624.97	0.02	0.05
P83-20"	1,314.00	20.0	Ductile Iro	130.0	false	0.00	Open	328.34	624.97	624.94	0.03	0.03
P84-12"	28.00	12.0	Ductile Iro	130.0	false	0.00	Open	119.21	624.97	624.97	0.00	0.06
P85-12"	804.00	12.0	Ductile Iro	130.0	false	0.00	Open	48.25	624.95	624.94	0.01	0.01

Appendix B
Fire Hydrant Flow Test Data

CALCULATOR

STATIC PRESSURE (psi) =	82
RESIDUAL PRESSURE (psi) =	37
TOTAL FIELD FLOW Q(f) (gpm) =	940
DESIRED RESIDUAL PRESSURE (psi) =	20
FLOW AT DESIRED RESIDUAL PRESSURE Q(r) (gpm) =	1118

static - desired residual	62
static - actual residual	45
(static - desired residual)^0.54	9.287344
(static - actual residual)^0.54	7.811506
(static - desired residual)^0.54 / (static - actual residual)^0.54	1.188931

Fire Hydrant Flow Test Summary
For N.Y. International Site, Town of New Windsor System on Stewart International
Tests conducted by Chazen Engineer Erik Whitney & Jim McCarey for Belle & Cring, 1/25/02 & 2/22/02
Tests conducted by Chazen Engineer Sean Farrell & Andy Stone 5/14/02 & 5/20/02

Gauged Hydrant Hydrant # (#)	Elevation Gauged Hydrant (ft)	Gauged Hydrant Static Press. (psi)	Gauged Hydrant Residual Press. (psi)	Flowed Hydrant Hydrant # (#)	Elevation Flowed Hydrant (ft)	Flowed Hydrant Flow (gpm)	Flowed Hydrant Flow Calculated 20 psi Residual (gpm)	Change In Elevation Bet. Hyds. (ft)	Pipe 1 Length Bet. Hyds. (ft)	Pipe 1 Diameter Bet. Hyds. (in)	Pipe 2 Length Bet. Hyds. (ft)	Pipe 2 Diameter Bet. Hyds. (in)	Pipe 3 Length Bet. Hyds. (ft)	Pipe 3 Diameter Bet. Hyds. (in)	Pipe Fittings Bet. Hyds.	Test Date	Test Time	Static - 20 psi residual Head Loss Hf (psi)
39	523	40	32	47	517	860	1411	6	69	12	128	12			T- 12x12x12	2/22/2002	10:30	20
38	522	40	31	39	523	815	1254	-1	113	12	317	8			T- 12x10x8	2/22/2002	10:15	20
39	523	40	28	30	444	1153	1519	79	391	10	28	8			T- 10x10x8	2/22/2002	10:55	20
30	444	75	60	27	421	1340	2703	23	290	10	28	8				2/22/2002	11:15	55
27	421	86	75	28	421	1030	2710	0	591	8					T- 10x10x8	2/22/2002	11:30	66
25	421	85	63	88A	429	933	1884	-8	483	8						2/22/2002	11:45	65
82	449	73	38	87	435	940	1176	14	431	8						1/25/2002	13:00	53
1	459	69.5	36	82	449	845	1079	10	246	8	54	12			C- 12x8	1/25/2002	13:30	49.5
2	461	69	50	85	485	640	1067	-4	100	12	303	8			T-12x12x6	1/25/2002	14:00	49
87	492	51	30	36	520	660	814	-28	33	8	354	8				1/25/2002	14:30	31
36	520	41	26	38	522	710	851	-2	257	8	336	8				2/22/2002	9:45	21
41	517	40	20	42	512	830	830	5	381	12						5/14/2002	9:45	20
42	512	43	22	35	475	1000	1050	37	581	12	371	8			T-12x8x10	5/14/2002	10:15	23
35	475	60	58	32	456	900	3121	19	172	8	251	8			T-8x8x8	5/14/2002	10:45	40
35	475	60	40	29	447	1130	1843	28	261	8	172	8			T-8x8x8	5/14/2002	11:00	40
35	475	60	54	28	421	1280	3568	54	172	8	696	8	61	10	T-10x10x8	5/14/2002	11:30	40
28	421	88	67	79	418	1450	14155	2	444	8	61	10			C-10x8	5/20/2002	9:30	68
28	421	67	60	27	421	1250	4233	0	554	10						5/20/2002	9:30	67
32	457	70	22	31	448	980	1002	8	430	8						5/20/2002	10:00	50
51A	535	32	26	50	510	795	795	25	390	8						5/20/2002	10:30	12
51A	535	32	20	51B	538	700	790	-3	228	8						5/20/2002	10:45	12
63	434	80	60	67	438	1000	1810	-4	370	8						5/20/2002	11:15	50
65	426	82	37	68	426	940	1118	2	365	8						5/20/2002	11:30	62

Note: The residual pressure refers to the pressure at the gauged hydrant.
Available fire flows may be less when model constraints hold minimum pressure at 20 psi for entire system.

Appendix C
Water Supply Report
New York International Plaza

Pipe 1

Flow - Q (GPM)	Internal Diameter (inches)	Pipe Length (feet)	C	Head Loss H/ (FT)	Head Loss H/ (psi)	Velocity (FPS)
1411	12	69	10	16.1	7.0	4.0
1254	12	113	54.8	2.2	0.9	3.6
1519	10	391	44.6	38.2	16.5	9.2
3	10	290	40.3	98.8	42.8	11.0
0	8	591	84.5	152.3	66.0	17.3
84	8	483	47.5	149.6	64.9	10.7
1176	8	431	34.6	122.3	53.0	7.8
1079	8	246	24.9	110.5	47.9	5.9
1067	12	100	58.4	1.4	0.6	3.0
814	8	33	30.4	6.1	2.6	5.2
851	8	267	49.6	21.7	9.4	5.4
830	12	361	13	46.2	20.0	2.4
1050	12	561	50	9.2	4.0	3.0
3121	8	172	106.5	37.5	16.3	19.9
1643	8	261	56.7	56.7	24.2	10.5
3566	8	172	176	18.9	8.2	22.6
14155	8	444	385	147.3	63.8	90.4
4233	10	554	70	156.6	67.5	17.3
1002	8	439	31	114.8	49.7	6.4
795	8	380	49	27.8	12.0	5.1
790	8	228	37	27.7	12.0	5.0
1810	8	370	46	138.2	60.3	11.8
1118	8	369	26	142.8	61.8	7.1

Pipe 2

Flow - Q (GPM)	Internal Diameter (inches)	Pipe Length (feet)	C	Head Loss H/ (FT)	Head Loss H/ (psi)	Velocity (FPS)
1411	12	128	16	29.6	12.8	4.0
1254	8	317	54.8	45.7	19.0	8.0
1519	8	28	44.6	8.1	3.5	9.7
2703	8	28	40.3	26.2	12.2	17.3
1079	12	54	24.9	8.4	1.6	3.1
1067	6	303	58.4	111.6	48.4	12.1
814	8	354	30.4	65.3	28.3	5.2
851	8	336	49.6	27.3	11.8	5.4
1050	8	371	50	43.7	18.9	6.7
3121	6	281	106.5	54.7	23.7	19.9
1643	8	172	56.6	36.6	15.9	10.5
3566	6	636	176	70.1	30.4	22.6
14155	10	81	385	8.1	3.9	87.8

Pipe 3

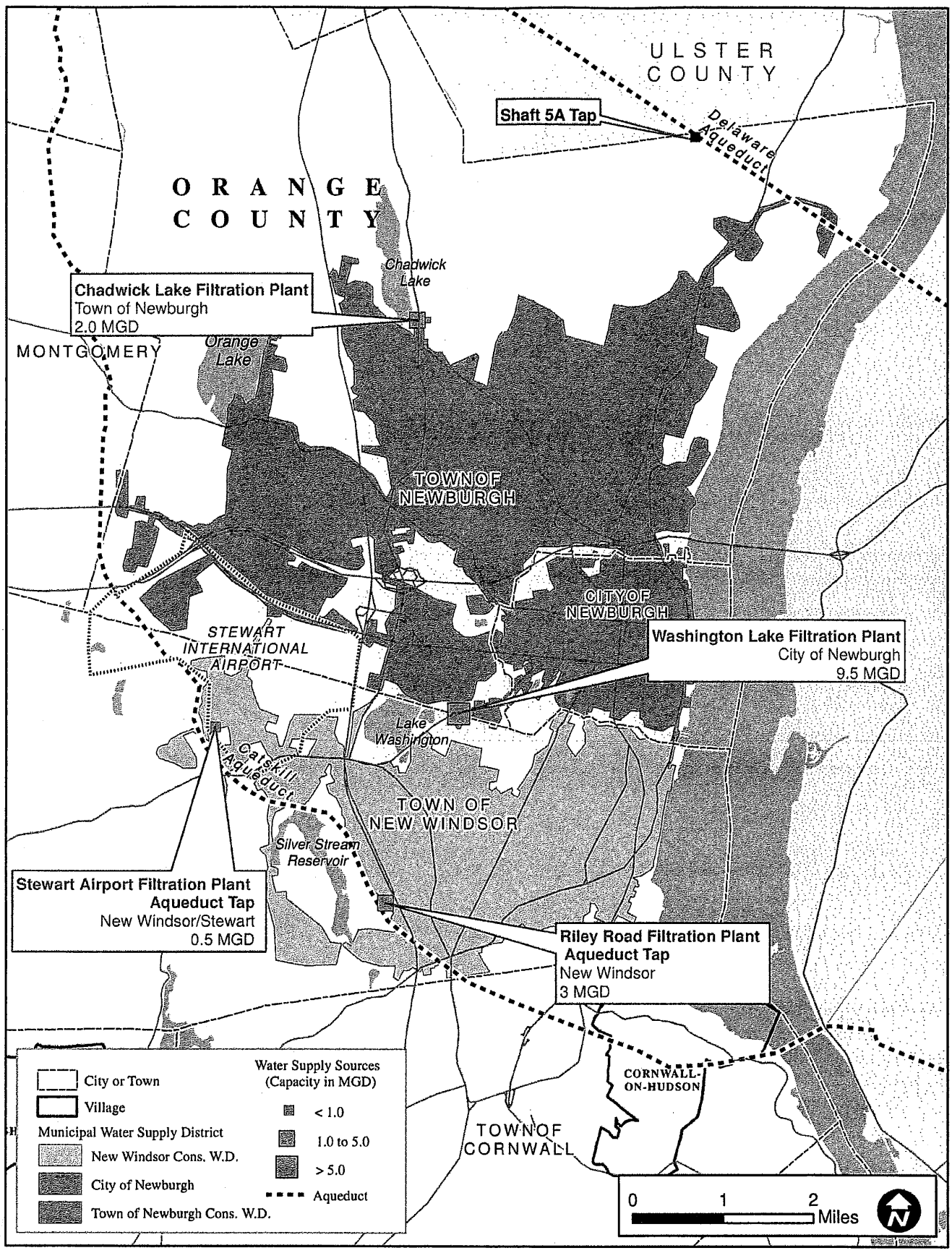
Flow - Q (GPM)	Internal Diameter (inches)	Pipe Length (feet)	C	Head Loss H/ (FT)	Head Loss H/ (psi)	Velocity (FPS)
3566	10	81	176	3.0	1.3	14.6

Total Head Loss H/ (psi)	Static - 20 psi residual Head Loss H/ (psi)
19.9	20
19.9	20
20.0	20
55.0	55
66.0	66
64.9	65
53.0	53
49.4	49.6
49.0	49
30.9	31
21.2	21
20.0	20
22.9	23
40.0	40
40.0	40
39.9	40
67.8	68
67.5	67
49.7	50
12.0	12
12.0	12
60.3	60
61.8	62

Appendix C
Water Distribution System Model Results

Scenario: EXISTING SYSTEM 12-3-02
Steady State Analysis
Junction Report

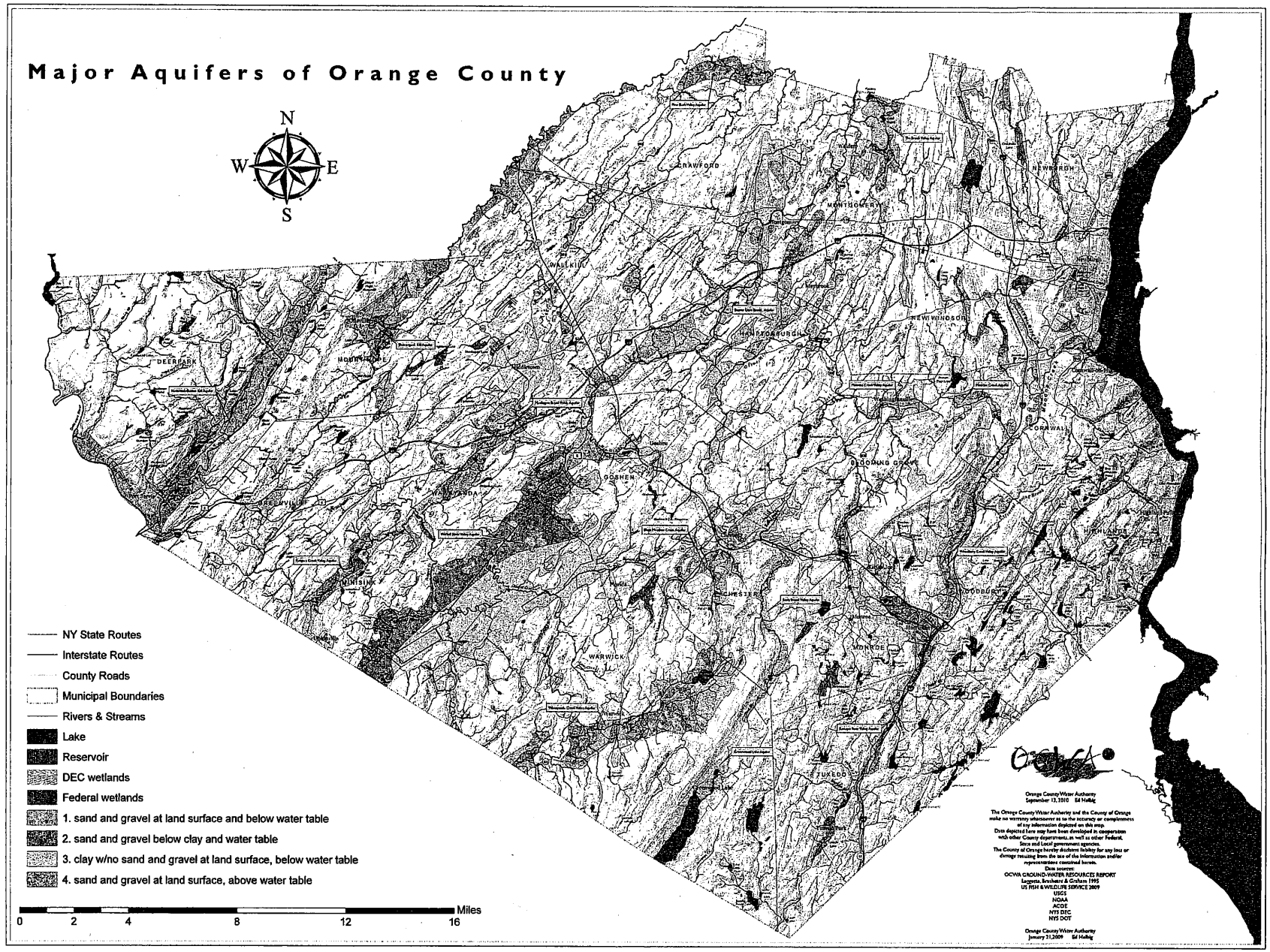
Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand Calculated (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J1	524.00	Zone-1	Demand	6.40	Fixed	6.40	624.97	43.69
J2	526.00	Zone-1	Demand	6.40	Fixed	6.40	624.96	42.82
SCHOOL SERVI	465.00	Zone-1	Demand	2.00	Fixed	2.00	624.94	69.20
J9	444.00	Zone-1	Demand	6.40	Fixed	6.40	624.94	78.29
J8	421.00	Zone-1	Demand	6.40	Fixed	6.40	624.94	88.24
J4	455.00	Zone-1	Demand	13.25	Fixed	13.25	624.94	73.53
J10	494.00	Zone-1	Demand	2.09	Fixed	2.09	624.94	56.65
J12	465.00	Zone-1	Demand	5.56	Fixed	5.56	624.94	69.20
J13	421.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	88.23
J7	459.00	Zone-1	Demand	1.85	Fixed	1.85	624.94	71.80
LSI WAREHOUS	464.00	Zone-1	Demand	17.36	Fixed	17.36	624.94	69.63
J5	445.00	Zone-1	Demand	5.00	Fixed	5.00	624.94	77.85
END-CAP	441.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	79.58
J6	442.00	Zone-1	Demand	5.00	Fixed	5.00	624.94	79.15
MOB-SERVICE	442.00	Zone-1	Demand	2.80	MOB	2.80	624.94	79.15
J18	420.50	Zone-1	Demand	80.00	Fixed	80.00	624.94	88.45
J26	418.00	Zone-1	Demand	4.17	Fixed	4.17	624.94	89.53
J20	435.00	Zone-1	Demand	80.00	Fixed	80.00	624.93	82.18
J19	423.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	87.37
J21	424.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	86.94
J22	430.00	Zone-1	Demand	80.00	Fixed	80.00	624.94	84.34
J30	435.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	82.18
J27	421.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	88.23
J31	430.00	Zone-1	Demand	6.94	Fixed	6.94	624.94	84.34
J32	460.00	Zone-1	Demand	8.43	Fixed	8.43	624.94	71.36
J33	484.00	Zone-1	Demand	6.90	Fixed	6.90	624.94	60.98
J34	466.00	Zone-1	Demand	7.50	Fixed	7.50	624.93	68.76
J38	442.00	Zone-1	Demand	1.74	Fixed	1.74	624.93	79.15
J35	431.00	Zone-1	Demand	1.74	Fixed	1.74	624.94	83.91
J36	438.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	80.88
J37	432.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	83.47
J40	430.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	84.34
J41	429.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	84.77
J42	426.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	86.07
J44	432.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	83.47
J45	432.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	83.47
J43	428.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	85.20
J11	469.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	67.47
J14	526.00	Zone-1	Demand	26.50	Fixed	26.50	624.83	42.76
J15	538.00	Zone-1	Demand	22.00	Fixed	22.00	624.84	37.57
J16	592.00	Zone-1	Demand	0.00	Fixed	0.00	624.98	14.27
J17	602.00	Zone-1	Demand	0.00	Fixed	0.00	624.99	9.95
J39	457.00	Zone-1	Demand	9.20	Fixed	9.20	624.93	72.66
J24	430.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	84.34
J28	424.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	86.94
J29	436.50	Zone-1	Demand	0.00	Fixed	0.00	624.94	81.53
J25	433.00	Zone-1	Demand	0.00	Fixed	0.00	624.94	83.04
J23	420.50	Zone-1	Demand	50.42	Fixed	50.42	624.94	88.45
J50	503.00	Zone-1	Demand	1.85	Fixed	1.85	624.95	52.76
J51	523.00	Zone-1	Demand	6.40	Fixed	6.40	624.95	44.11
J52 NEW	524.00	Zone-1	Demand	0.00	Fixed	0.00	624.97	43.69



HDR Orange County Water Authority

Figure ES1. Current Water Supply Facilities in Northeast Orange County

Major Aquifers of Orange County



New Windsor finds new water source

July 14th, 2011

"It's more valuable than gold," New Windsor Supervisor George Green has said of water.
If that's the case, New Windsor has struck gold. An aquifer deep underground the Hudson River that is estimated to have the potential of supplying water well in excess of the town's daily consumption needs, is being pursued as a new source for the town.

On Wednesday night, moments before voting on the Plum Point wells that would be fed by the aquifer, the Town Board increased water rates – a result of a decision by the New York City Water Board earlier this spring to bill upstate communities more for water from the Catskill Aqueduct, which is New Windsor's primary supply. The rates will increase to $4.81 per 100 cubic feet from $4.47; $5.98 per thousand gallons to $6.43. The new rates will be reflected in residents' September water bill.

Green said, "I'd like to comment on it, but I'm afraid to go into my usual tirade about the City of New York."

He added that the town is "very, very close" to being independent. Green has long spoken about making the town self-reliant on water. The question has been, where will the water come from?
Wednesday night's news of the aquifer located more than 100 feet below the river bed provided the answer to that question. Two test wells have been dug at Plum Point and three additional tests have been conducted in the river itself. The Town Board approved a resolution last week to execute an Environmental Assessment Form and declare the town Lead Agency on the Plum Point wells' project.

"Step one on our odyssey toward water independence," said Green.

The town needs 3.5 to 4.5 million gallons daily. The aquifer has been estimated to have the potential of providing 300 million gallons daily "far in excess of what we need, far in excess of what the whole county would need," noted Green.

Water rates have been increasing yearly. Simultaneously the town has struggled with having to adapt to shutdowns of the Catskill Aqueduct, including one occasion when no prior warning was given to the town earlier this year. Oftentimes the shutdowns are due to turbidity (cloudiness in the water). This leaves New Windsor having to connect to Brown's Pond, a City of Newburgh-owned reservoir that has on occasions elicited water quality complaints from residents.

Green explained that the water from the aquifer is not Hudson River water. An impermeable clay

surface "seal[s] the surface water from the aquifer," he said.

"The water is excellent quality."

A visit to the Town of Bethlehem in Albany County, which has tapped into a similar aquifer underneath the Hudson, is planned in the near future. New Windsor officials will learn about the infrastructure that made it a reality for that upstate community, which has a population similar in size to New Windsor. Any infrastructure built in connection with this project in New Windsor would be financed through bonding.

Regarding the switching of water sources, Green said, "It will most certainly stabilize our rates for the foreseeable future."

Green says water independence would free New Windsor from ever rising water costs. Last year, the New York City Water Board increased rates 24.7 percent; this year, 5.5 percent.

"It'll be nice to keep that money home," he said.

Also, due to a new contract between the City of Newburgh and the Town of New Windsor for use of Brown's Pond during emergencies, the city bills the town at a rate that mirrors New York City's plus 15 percent for operation and maintenance costs.

Green, who has spent much of his time on water-related issues, says, "This has been very exciting to me."

In other business, the town awarded bids to Arkel Motors for the purchase of a 2012 truck chassis and 29 cubic yard loader refuse body for use by the Highway Department;

Awarded a lease purchase agreement with M&T Bank for the police and highway vehicles at a total of approximately $350,000;

Authorized Schlesinger's Steak House to dispense alcoholic beverages at New Windsor Community Day on August 27;

Authorized the execution of an intermunicipal agreement with the Village of Cornwall-on-Hudson for cooperative information technology services;

Authorized the supervisor to execute a 20-year solid waste processing and disposal agreement with Taylor Biomass Energy in Montgomery, the details of which are still in the works;

Authorized the town clerk to advertise bids for rooftop HVAC units for the Justice Court and Police Department. The units will be funded by a $65,000 energy efficiency grant through Orange County; Approved a special use permit for 20 units of workforce housing at Mason's Ridge off of Route 32.

Comments are closed.

City Council tables Biomass bid Supervisor admits to improper meeting

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MAP SCALE 1" = 1000'

00 0 1000 2000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0330E

FIRM

FLOOD INSURANCE RATE MAP

for ORANGE COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
BLOOMING GROVE, TOWN OF	360608
CORNWALL, TOWN OF	360611
NEW WINDSOR, TOWN OF	360628
NEWBURGH, TOWN OF	360627

PANEL 330 OF 630
MAP SUFFIX: E
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
36071C0330E

EFFECTIVE DATE
AUGUST 3, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Upland Sandpiper Habitat Assessment Report

New York International Plaza

(Former Stewart Army Subpost (STAS) Lands)

Town of New Windsor, Orange County, NY

July 2002

Ecological Solutions, LLC

Prepared For:

First Columbia International Group, LLC
c/o Chris Bette, P.E.
26 Century Hill Drive
Latham, NY 12110
(518) - 213 - 1000

Upland Sandpiper Habitat Assessment Report

New York International Plaza

(Former Stewart Army Subpost (STAS) Lands)

Town of New Windsor, Orange County, NY

July 2002

Prepared by:

Michael Nowicki, Biologist
Ecological Solutions, LLC
1248 Southford Road
Southbury, Connecticut 06488

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1.0 EXECUTIVE SUMMARY

Ecological Solutions, L.L.C. has been retained by First Columbia L.L.C. to complete a field investigation for presence of the Upland Sandpiper habitat for the proposed redevelopment of the Stewart Army Subpost (STAS) lands located in the Town of New Windsor, Orange County, New York. The redevelopment of the STAS lands, known as "New York International Plaza, includes proposed construction of commercial, residential facilities and associated infrastructure on approximately 248-acres. (Figure 1.0).

As part of the environmental review for the project, New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program personnel via correspondence dated October 20, 2000, asserted that, based on information in its database, a New York State threatened species, Upland Sandpiper (*Bartramia longicauda*), or suitable habitat for this species may exist in the project area. The Upland Sandpiper is considered a threatened species in New York State with extant populations occurring in Orange County typically around airports with open fields.

The purpose of the field assessments was to determine whether there was any evidence of the existence of the upland sandpiper, whether suitable Upland Sandpiper habitat is present on the project site and if habitat exists, to assess impacts to potential habitat from the development of the proposed New York International Plaza. The following analysis of the New York International Plaza property for Upland Sandpiper habitat and populations was prepared in accordance with NYSDEC Natural Heritage correspondence. Visual surveys were completed during June and July 2002, to determine if potential Upland Sandpiper habitat exists on the 248 (+-) acre property. Upland Sandpipers are active during this time period and a significant effort was made to visually locate birds within the proposed development areas. The effort involved consisted of 2 working days of field investigation and habitat identification and analysis on the property. Identification of Upland Sandpiper habitat was limited to areas on the property.

The results of the field investigation yielded no sightings of the upland sandpiper and no evidence of nests on the property. Therefore, the proposed development of NYIP will not result in any loss of habitat.

2.0 INTRODUCTION

As part of the environmental review for the redevelopment of the Stewart Army Subpost (STAS), New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program personnel were contacted. Correspondence from NYSDEC, dated October 20, 2000, asserted that, based on information in its database, a New York State threatened species, Upland Sandpiper (*Bartramia longicauda*), or suitable habitat for this species may exist in the project area.

The purpose of this report is to document the investigation performed to determine whether there is any evidence of the existence of the upland sandpiper, whether Upland Sandpiper habitat is present on the project site and if habitat exists, to assess if the habitat is impacted by the proposed development of New York International Plaza (NYIP).

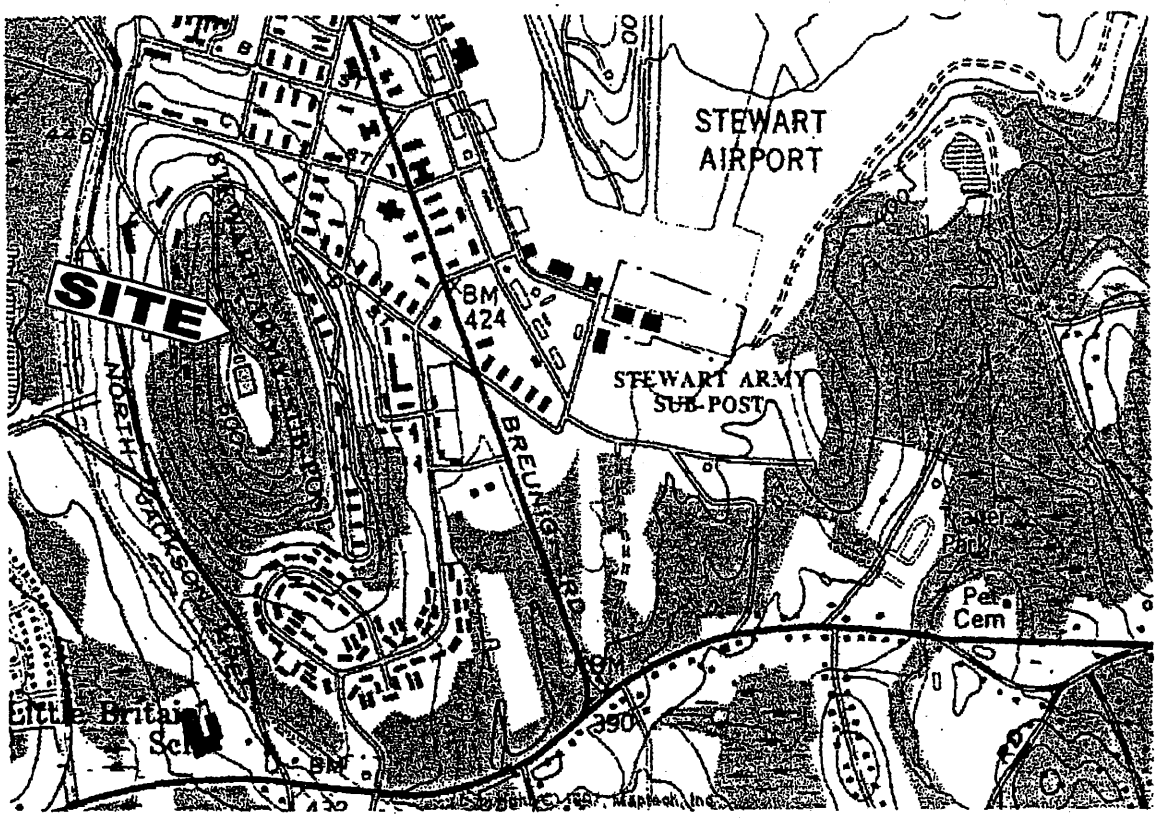
Ecological Solutions, L.L.C. performed visual surveys at the project site during June and July 2002, to determine if potential Upland Sandpiper habitat exists on the 248 (+-) acre property. Upland Sandpipers are active during this time period and a significant effort was made to visually locate birds within the proposed development areas. The effort involved consisted of 2 working days of field investigation and habitat identification and analysis on the property. Identification of Upland Sandpiper habitat was limited to areas on the property (Figure 1.0).

3.0 LITERATURE REVIEW

According to the National Wildlife Federation[1], the Upland Sandpiper is a bird of 11 – 12.5 inches. This bird is a sandpiper of open meadows with long yellowish legs, slender neck and small head, and short bill. The upper parts of the bird are brown and scaly, its under parts are streaked and barred. Ends of wings are dark in flight; tail long and wedge-shaped. Often holds wings upward briefly on alighting, exposing black and white barring on its under-wing.

[1] *http://www.enature.com*

Figure 1.0
Location Map



	Source USGS Quadrangle; Cornwall	**Figure 1.0**
	Scale in Feet 0 1000 2000 3000	**Site Location Map**
North		**New York International Plaza** **New Windsor, New York**
December, 2000		

3.1 LIFE HISTORY AND STATUS

Upland Sandpipers are distinctive medium-sized shorebirds with rather small rounded heads held on long thin necks. The short, thin bill is slightly down-curved and dusky tipped. The long tail protrudes well beyond the folded wings. It has the longest tail of any sandpiper and contributes to the bird's elongated shape.

Adults are mottled brown above, with a dark brown crown. There is a narrow and well-defined median crown stripe. The face and neck are light brown, streaked with black, and the throat is contrasting pale buff. A prominent pale ring surrounds the large eye. The breast and sides are light brown, heavily marked with black chevrons. The rest of the under parts are white. Tail feathers are barred, dark brown; the outer tail feathers are pale orange buff at the base and tipped in white. The legs and feet are dull yellow and do not project beyond the tail in flight.

Upland Sandpipers resemble the curlews to which they are apparently closely related, but they lack the curlews' longer, strongly down-curved bills. American Golden-Plovers and Buff-breasted Sandpipers are similar and to some extent share the same habitat requirements. An Upland Sandpiper can be distinguished from an American Golden-Plover by its long neck and small head. Although the bill is short for a sandpiper, the Upland Sandpiper's bill is longer than any plover's bill.

Buff-breasted Sandpipers are somewhat similarly plumaged with yellowish legs, but they are much smaller, with a shorter neck and tail. Buff-breasted Sandpipers lack the Upland Sandpiper's heavily marked breast and sides.

3.2 Distribution and Habitat

Upland Sandpipers are an inland species and not frequently found in coastal areas. Preferred habitat consists of short grassy areas for feeding and courtship with occasional taller grasses that can conceal the nest. They are birds of native prairie, dry meadows, pastures, and hayfields, ranging from Alaska through the prairie provinces and Great Plains states into the northeastern United States and the Saint Lawrence River valley of Canada. In the Great Plains, they are fairly common and their numbers have increased in recent decades. In the East, Upland Sandpipers expanded their range as forests were cleared, but in the late 19th and early 20th centuries, market hunting and loss of habitat to agriculture caused precipitous declines. Airfields now provide the majority of suitable habitat in the northeastern United States.

Upland Sandpipers are loosely colonial breeders. Nest territories are grouped together adjacent to loafing and feeding areas that are shared communally. The males perform spectacular courtship displays, singing while ascending and soaring in wide circles at great heights. In outline the long wings and tail give Upland Sandpipers a cross like

shape. They fly with shallow fluttering wing beats in the manner of Spotted Sandpipers. When alighting, the wings are often up held momentarily. Utility poles and fence posts are often used as perches from which the males sing. In addition to a breathy "wolf whistle" sounding like *whip-whee-ee-you*, a rapid, flute-like *quip-ip-ip-ip* series of alarm notes is given. Winters are spent in the pampas of southeastern South America.

4.0 CRITICAL HABITAT ASSESSMENT METHODOLOGY

The project area was surveyed for the presence of Upland Sandpiper habitat on 2 separate days during late June to early July 2002. Habitat evaluation and searches was based on the following criteria:

- An assessment of site habitat types via existing mapping;
- Assessments of the property to determine whether optimal or useful Upland Sandpiper habitat exists on the property and determine whether this species was utilizing the project site.

4.1 STEWART ARMY SUBPOST LANDS

The property is situated on the north side of State Route 207 and contains several habitat types including urban land/old field, hardwood forest and scrub/shrub uplands. This property rises gently from State Route 207 and slopes steeply up into the property and toward the center of the property and then slopes moderately down toward the rear of the property towards the Catskill Aqueduct. The property encompasses large sections of urban land associated with the remaining barracks structures from the use of the site as a military base. It is well known that, Upland Sandpipers utilize open low growing grass areas for nesting and socializing. This preferred habitat is maintained habitat that is located adjacent to the runways associated with Stewart Airport that exists adjacent to the NYIP property. Although the NYIP property contains patchy open areas these areas do not appear to be large enough to contain viable populations and no upland sandpipers were located on the property during the field work. It appears unlikely that the property supports a viable Upland Sandpiper population as a result of the existing habitat types and vegetation on the site. A mixture of upland hardwood forest and isolated wetland located on the property separates these urban land areas. The upland hardwood forest is dominated by several species of oak and maple and has a dense canopy cover and is dominant at the rear of the property. The bulk of the urban land on the property is located at the center/rear of the property. Observations of these areas provide evidence that these areas do not appear to contain sufficient amounts of low growing grass areas, and therefore, are not optimal habitat for Upland Sandpiper.

5.0 POTENTIAL IMPACTS ON UPLAND SANDPIPERS

Specific sightings of Upland Sandpipers in the vicinity of the project property are supported by the Natural Heritage database (record from 1983), however, this in no way is a reliable predictor for determining whether this species is utilizing the site or has ever utilized the property. Field investigations yielded no presence of habitat, nests or visual sightings of Upland Sandpipers. Therefore, there will be no impact to this species from development on the property.

6.0 UPLAND SANDPIPER MITIGATION MEASURES

Currently the property contains existing infrastructure and buildings that will be redeveloped. Mitigation measures are not proposed on the property because there are no impacts to the species from the proposed development on the property.

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 3
21 South Putt Corners Road, New Paltz, New York 12561-1620
Phone: (845) 256-3054 • FAX: (845) 255-4659
Website: www.dec.ny.gov

m Blythe

Joe Martens
Commissioner

May 9, 2014

RECEIVED
MAY 14 2014
...sor
...SORS OFFICE

George A. Green, Supervisor
Town of New Windsor
555 Union Avenue
New Windsor, NY 12553

RE: SEQR Review: Greenetrack Inc.at New Windsor – Development of a casino resort
Project ID: **5157**
Town of New Windsor, Orange County

Dear Mr. Green:

We have reviewed the SEQR lead agency coordination request for the above referenced project which our office received on April 16, 2014.

LEAD AGENCY DESIGNATION
The Department has no objection to the Town of New Windsor Town Board assuming lead agency status for this project.

DEPARTMENT JURISDICTION

Protection of Waters

The following stream is located within or near the site you indicated:

Name	Class	DEC Water Index Number	Status
Subtributary of Lake Washington	[A]	H-P225-1-3-3	[Protected]

☒ A Protection of Waters permit is required to physically disturb the bed or banks (up to 50 feet from stream) of any streams identified above as "protected." A permit is not required to disturb the bed or banks of "non-protected" streams.

The project sponsor is responsible for ensuring that work shall not pollute any stream or waterbody. Care shall be taken to stabilize any disturbed areas promptly after construction, and all necessary precautions shall be taken to prevent contamination of the stream or waterbody by silt, sediment, fuels, solvents, lubricants, or any other pollutant associated with the project.

Freshwater Wetlands

☒ The project/site is not within a New York State protected Freshwater Wetland. However, please contact the United States Army Corps of Engineers in New York City, telephone 917-790-8411, for any permitting they might require.

State-listed Species

☒ DEC has reviewed the State's Master Habitat Databank (MHDB) records. We have determined that the site is located near record(s) of the following state-listed species:

Name	Status
Upland sandpiper	[Endangered]
Indiana bat	[Endangered]

-OVER PLEASE -

The project site does not contain suitable habitat for Upland sandpiper. Therefore, no further review is necessary for potential impacts to this species.

However, the potential impacts of the proposed project on Indiana bat should be fully evaluated during the review of the project pursuant to SEQR. In addition, removal of trees greater than 4 inches diameter at breast height should be restricted to the period between October 1 and March 31 to adequately mitigate any potential impacts. For further guidance on this matter, please contact the undersigned analyst.

State Pollutant Discharge Elimination System (SPDES) for Construction Activity Stormwater Discharges

☒ Stormwater discharges require a SPDES Stormwater permit from this Department if they either:

- occur at industrial facilities and contain either toxic contaminants or priority pollutants OR
- result from construction projects involving the disturbance of 5000 square feet or more of land within the NYC Department of Environmental Protection (NYCDEP) East of Hudson Watershed or for proposed disturbance of 1 acre or more of land outside the NYCDEP Watershed

☒ This project may be covered by one of two Statewide General Permits or may require an individual permit. For information on stormwater and the general permits, see the DEC website at http://www.dec.ny.gov/chemical/8468.html. If this project requires a SPDES Stormwater Permit and this site is within an MS4 area (Municipal Separate Storm Sewer System), the stormwater plan must be reviewed and accepted by the municipality and the MS-4 Acceptance Form must be submitted to the Department. If the site is not within an MS4 area and other DEC permits are required, the sponsor must provide two copies of the required Stormwater Pollution Prevention Plan (SWPPP) with their permit application for DEC review and approval. Other permits will not be issued until the SWPPP is approved. Authorization for coverage under the SPDES General Permit is not granted until the Department issues any other necessary DEC permits.

OTHER

Please note that this letter only addresses the requirements for the following permits from the Department:
☒ Protection of Waters ☒ Master Habitat Databank ☒ Freshwater Wetlands ☒ SPDES Stormwater

Other permits from this Department or other agencies may be required for projects conducted on this property now or in the future. Also, regulations applicable to the location subject to this determination occasionally are revised and you should, therefore, verify the need for permits if this project is delayed or postponed. This determination regarding the need for permits will remain effective for a maximum of one year unless you are otherwise notified.

Please contact this office if you have questions regarding the above information. Thank you.

Sincerely,

Jean McAvoy
Region 3, Division of Environmental Permits
Telephone: 845/256-3165
Email: jvmcavoy@gw.dec.state.ny.us

Proposed Projects Within the 140 Acre Greenetrack Lease Area

Type	NYIP	Greenetrack	Difference
Office	880,000 ft^2	0	- 800,000 ft^2
Hotel	528 rooms	350 rooms	- 178 rooms (none built)
Restaurant	8,000 ft^2	50,000 ft^2	+ 42,000 ft^2
Education	160,000 ft^2	0	- 160,000 ft^2
Retail	100,000 ft^2	140,000 ft^2	+ 40,000 ft^2
R & D	80,000 ft^2	0	- 80,000 ft^2
Convention Center	100,000 ft^2	55,000 ft^2	- 45,000 ft^2
Casino	n/a	100,000 ft^2	+ 100,000 ft^2
Residential	~62 units	0	- 62 units

- This table only represents the area that will be leased by Greenetrack. Within this area, no uses were constructed under the NYIP project.

In conclusion, the Greenetrack project will construct 82,000 ft^2 additional Restaurant and Retail space, and a 100,000 ft^2 Casino. It will generate 45,000 ft^2 less of convention center uses, 80,000 ft^2 less of R&D uses, 100,000 ft^2 less of education facilities, 880,000 ft^2 less of office space, 178 less hotel rooms, and approximately 62 less residential units.

Remaining NYIP Lands

	Proposed	Built
A. Route 207 End:		
• Production & Warehouse	220,000 ft^2	*Area Built
• Medical Office	50,000 ft^2	*Area Built
• Office	255,000 ft^2	*Area Built
B. West of Avenue of the America's		
• Retail	60,000 ft^2	None (*Built offices)
C. World Trade Way Area		
• Residences	275 units	Built (<275 units)
• Restaurant	20,000 ft^2	None
• Hotel	198 rooms	None
• Office	20,000 ft^2	*Built
D. North of International Drive		
• Hotel	110 rooms	**0
• Office	30,000 ft^2	0

* Records indicate that as of 2007, there have been approximately 951,000 ft^2 of development at the NYIP site (plus new FBI building)

** It appears that there is only about 70,000 ft^2 to 90,000 ft^2 left to develop in the remaining NYIP lands.

Contract No. DACW51-97-D-0010
Delivery Order No. 63

U.S. Army Corps
of Engineers
New York District

PHASE IB CULTURAL RESOURCES INVESTIGATION STEWART ARMY SUBPOST U.S. MILITARY ACADEMY, WEST POINT NEW WINDSOR AND NEWBURGH TOWNSHIPS, ORANGE COUNTY, NEW YORK

DRAFT REPORT

January 2000

Panamerican Consultants, Inc.
Buffalo Branch Office
2390 Clinton Street
Buffalo, New York 14227-1735

PREPARED FOR:

Northern Ecological Associates, Inc.
33 Park Street
Canton, New York 13617

UNDER CONTRACT TO:

Environmental Analysis Branch
Environmental Assessment Section
U.S. Department of the Army
New York District, Corps of Engineers
26 Federal Plaza
New York, NY 10278-0090

PHASE IB CULTURAL RESOURCES INVESTIGATION
STEWART ARMY SUBPOST
U.S. MILITARY ACADEMY, WEST POINT
NEW WINDSOR AND NEWBURGH TOWNSHIPS, ORANGE COUNTY, NEW YORK

Draft Report

Michael A. Cinquino, Ph.D.
Project Director

Michele H. Hayward, Ph.D.
Co-Principal Investigator

Elizabeth S. Burt, M.A.
Co-Principal Investigator and Field Director

Prepared by:
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New York District, Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Contract No. DACW51-97-D-0010
Work Order No. 63

Michele H Hayward
Principal Investigator

January 2000

MANAGEMENT SUMMARY

Project Name. Phase IB Cultural Resources Investigation, Stewart Army Subpost, U.S. Military Academy, West Point, New Windsor and Newburgh Townships, Orange County, New York.

Project Location and Environmental Setting. The project area comprises approximately 100 acres (41 hectares) of the 16,000-acre (6,400-hectare) U.S. Military Academy (USMA) at West Point in Orange County, New York. The project area consists of eight previously defined areas of investigation which are located north of Route 207 and west of Breunig Road in the western section of the Stewart Army Subpost.

The Military Academy at West Point is situated within the Hudson River drainage which traverses the physiographic province of the Hudson Highlands. The Hudson Highlands are characterized by mountains, hilltops, knolls, lakes, ponds and streams with elevations ranging from sea level at the west bank of the Hudson River to 1,664 feet (508 meters) at the crest of Schunemunk Mountain, southwest of Newburgh. Within the study area, much of the terrain has been graded for use by the military. Beaverdam Creek which feeds Orange Lake north of the project area has been channelized on the western periphery of the study area. Elevations in the project area range from 400 ft (122m) near Little Britain School on Route 207 to 600 ft (183 m) at the top of Prospect Hill.

Purpose and Goals. A Phase IB cultural resources investigation was conducted at each of the eight study areas within the Stewart Army Subpost by Panamerican Consultants, Inc. under subcontract to Northern Ecological Associates, Inc., Canton, New York, under contract to the U.S. Army Corps of Engineers, New York District. The purpose of the survey was to identify any cultural resources that may be impacted by the proposed divestiture of the Subpost.

Regulatory Basis. The U.S. Army, as a federal agency, has management responsibilities concerning the protection and preservation of cultural resources on land it controls or uses. Federal statutes require the Army to identify and evaluate significant cultural resources on these properties, and include: National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et. seq.*) through 1992 (which includes Section 106 compliance); the Advisory Council on Historic Preservation Guidelines for the Protection of Cultural and Historic Properties (36 CFR Part 800); as well as Army Regulation (AR) 200-4 "Cultural Resources Management."

Cultural Resources Survey Work Completed. Shovel tests were placed along transects at 50-ft (15-m) intervals or opportunistically dependent upon landforms in sensitive areas. A total of 190 shovel tests were excavated along 25 transects throughout the project area. One excavation unit was also dug in Study Area 1. No subsurface testing was conducted in areas of severe slope or known prior disturbance.

Survey Results. One historic period site was identified in Study Area 1. Site PCI/SA-1 consists of a 60-x-65 ft (18-x-20 m) area including the already investigated historic Sayre-McGregor house and two newly located subsurface artifact concentrations. The house was built in 1847, with occupation

continuing to the present as the Subpost's base commander's residence. The two artifact concentrations contain a variety of materials which date to the late-1800s and possibly into the 1900s. The stratigraphic context and nature of the artifacts themselves, suggests that they can best be described as fill material.

A high degree of disturbance (e.g., fill material and presence of military structures) and modern materials recovered from the shovel tests mark the remaining study areas—Areas 2 through 8.

Conclusions and Recommendations. The two artifact concentrations from Study Area 1 represent moderate to high assemblage collections and are located close to the Sayre-McGregor house. In a previous Phase IA investigation this structure was considered not eligible to the National Register of Historic Places. Despite the proximity of the artifact concentrations to the house and comparable nineteenth century dating of the recovered materials and historic period occupation of the structure, a clear associative context is lacking. The artifacts, especially when considered as fill material, could be derived from sources other than the historic period residence of the house. Later additions to the Sayre-McGregor house and nearby construction activities could be responsible for the deposition or removal of soils at the site area. Therefore, the nature and context of the materials does not meet the requirements of eligibility necessary for inclusion within the National Register, even assuming an association to the Sayre-McGregor house.

No further archaeological investigations are recommended for Study Area 1, or the remaining seven study areas.

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1.0 INTRODUCTION

Panamerican Consultants, Inc. (PCI), under contract to Northern Ecological Associates, Inc., Canton, New York, on behalf of the U.S. Army Corps of Engineers, New York District, conducted a Phase IB cultural resources investigation at the Stewart Army Subpost (STAS), U.S. Military Academy, West Point (USMA), New Windsor and Newburgh Townships, Orange County, New York. The contact person in the USACE New York District office is archaeologist Ms. Nancy Brighton.

The USMA reservation at West Point comprises approximately 16,000 acres (6,400 hectares) along the west bank of the Hudson River in the Orange County Highlands. Established in 1802, the USMA is a Major Command (MACOM) of the United States Army. The mission of the Academy is "to educate and train the Corps of Cadets so that each graduate shall have the attributes essential to professional growth throughout a career as an officer of the Regular Army and to inspire each to a lifetime of service to the nation" (Alongi 1998:2). Stewart Army Subpost is situated northwest of the main installation and is located adjacent to the existing Stewart International Airport. Stewart Airfield was established in 1941 to provide facilities for flight training of West Point cadets. Stewart Air Force Base was established in 1946 when the Air Force took over control of the air field and the Army Substation remaining at Stewart. The STAS currently includes administrative buildings, housing and support structures. A radar station is situated on the summit of Prospect Hill on the western side of the Subpost. Most of the STAS buildings are vacant (Meyer et al. 1998). In preparation for excessing property within the bounds of what is now STAS, the U.S Military Academy at West Point contracted PCI to conduct archaeological investigations in eight previously identified archaeologically sensitive areas (Meyer et al. 1998:Figure 12, Table 3). The objective of the studies was two-fold: to identify sites potentially eligible for the National Register of Historic Places (NRHP) and to delimit their boundaries in order to avoid possible adverse effects related to the divestiture of the STAS.

A Phase IA investigation for the entire STAS was previously undertaken in 1998 by John Milner and Associates, Inc. in association with The Greeley-Polhemus Group, Inc., West Chester, Pennsylvania. The Phase IB field investigation was conducted by PCI between August 23 and 31, 1999. Dr. Michael Cinquino served as Project Director, Dr. Michele Hayward served as Co-Principal Investigator, and Ms. Elizabeth S. Burt served as Co-principal Investigator and Field Director. The field crew consisted of four technicians.

The cultural resource investigation was carried out in compliance with the following federal laws and regulations: National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470 *et. seq.*) through 1992 (which includes Section 106 compliance); National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4371 *et. seq.*); Historic Preservation Act of 1974 (16 U.S.C. 469-469c); and the Advisory Council on Historic Preservation (ACHP) Guidelines for the Protection of Cultural and Historic Properties (36 CFR Part 800); as well as Army Regulation (AR) 200-4 "Cultural Resources Management."

2.0 PROJECT DESCRIPTION AND ENVIRONMENTAL SETTING

2.1 PROJECT DESCRIPTION

The project area consists of eight previously defined areas of investigation which are situated north of Route 207 and west of Breunig Road on the western section of STAS, New Windsor and Newburgh, Townships, Orange County, New York (Figure 2.1). The combined area is approximately 100 acres (41 hectares). The eight study areas as identified by John Milner and Associates, Inc (Meyer et al. 1998:Figure 12, Table 3) include seven potential historic household locations: 1) Sayre-McGregor House, 2) T.M. Kernochan/Wm. Montgomery, 3) J. Tilton/W.B. Tilton, 4) Mrs. Denniston's, 5) J. & B. Coleman, 6) I. Belknap, and 7) J.K. Alexander. The eighth study area comprises the southwest slopes of Prospect Hill, considered an area of possible prehistoric rockshelter locations. To facilitate the design and execution of the field testing strategy PCI combined this last project area with Study Areas 3 and 4 to form Study Area 8 (see Figure 2.1). All areas are located adjacent to North Jackson Avenue and are described in detail in Section 2.8.

2.2 PHYSIOGRAPHY

Stewart Army Subpost situated within the northeast corner of Orange County, New York. This region is near the boundaries of two physiographic provinces which include the New England Uplands to the south and east and the Hudson Mohawk Lowland to the west and north. The Hudson Highlands are part of the Folded Appalachians or the great Ridge and Valley Province of the eastern U.S. which is a belt of folded and faulted Paleozoic sediments which range from Tennessee to Canada (Funk 1976:5). The Highlands combine with the Taconic Mountains to form the New England Uplands. Within the Hudson Highlands, which trend in a northeast-southwest direction, lies a belt of crystalline rocks containing granite, gneiss and schist which are successfully mined and used in construction. The Hudson River drainage traverses the physiographic province of granite and gneiss.

The Hudson Highlands are typified by mountains, hills, knolls, lakes, ponds and streams. Elevations range from sea level at the west bank of the Hudson River to 1,664 ft (508 m) at the crest of Schunemunk Mountain, southwest of Newburgh. Within the project area, much of the terrain has been graded for use by the military. Beaverdam Creek, which feeds Orange Lake north of the project area, has been channelized on the western periphery of the project area. Elevations range from 400 feet (122 m) near Little Britain School on Route 207 to 600 ft (183 m) at the top of Prospect Hill.

2.3 SOILS

Soils within the Hudson Highlands can be characterized as extremely acidic, shallow, very rocky, and poorly drained (Thompson 1977:Figure 33). Soils within the study area fall predominantly within the classification of the Mardin series which consists of deep, moderately well drained, gently sloping to very steep soils which formed in glacial till in uplands and tend to be deep when encountered over bedrock (Olsson 1981:95). The top of Prospect Hill has Mardin gravelly silt loam

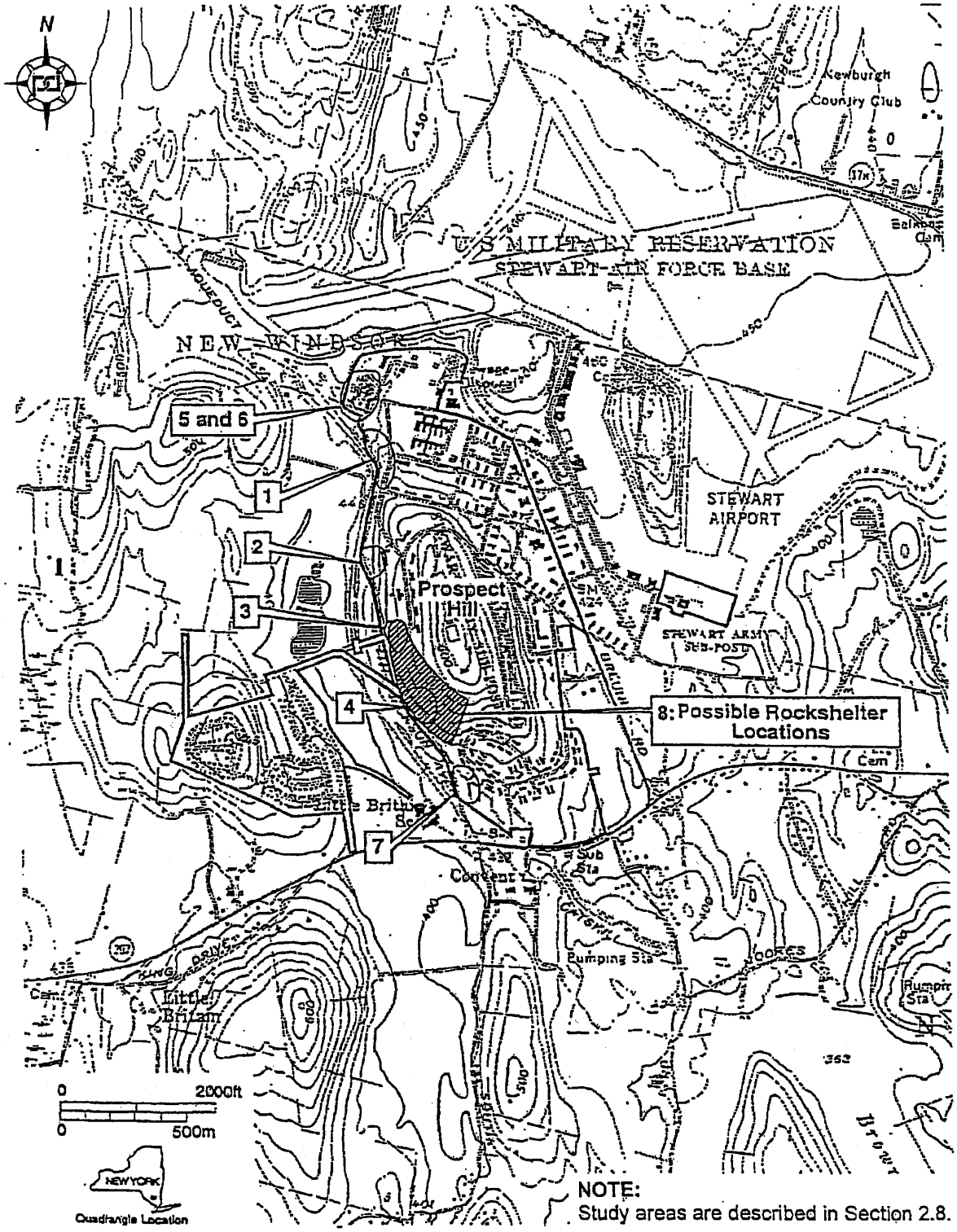


Figure 2.1. Archaeologically sensitive study areas within the project area *(adapted from Meyer et al. 1998:Figure 12).*

with 8 to 15 percent slope (MdC) as does the lower slope and the area near North Jackson Avenue (Olsson 1981:Sheet 31). A band of Mardin gravelly silt loam with 15 to 25 percent slope (MdD) crosses the middle of the western slope of Prospect Hill. The northwestern section of the project area contains small areas of Histic Humaquepts and Raynham soils. Histic Humaquepts are deep, poorly drained soils formed in glacial till that remain ponded most of the year (Olsson 1981:93). Raynham soils are deep, somewhat poorly drained to poorly drained, nearly level soils formed in slightly depressed areas in uplands and valleys containing glacial lake deposits (Olsson 1981:98). Also found within the northwest section of the project area are gravel pits (Olsson 1981:Sheet 31).

2.4 Hydrology

Orange Lake is located north of the project area and is fed by Beaverdam Creek which borders the project area on the west. A reservoir has been constructed on the top of Prospect Hill.

2.5 Climate

The areas in the vicinity of the USMA reservation are part of the climatic division known as Region III within New York State (Thompson 1977: Figure 24) which covers the same general area as the Appalachian/New England Uplands physiographic zone. Characterized by cool, snowy winters and warm, wet summers, climatic conditions are modified in the mountainous areas. Temperatures during the winter in Orange County average near 29° Fahrenheit (-2° Centigrade) while summer mean temperatures are 73° F (23° C), although the mountainous areas are markedly cooler. Average yearly snowfall is 43 inches (1.1 m), but snowfall may be substantial in the upper elevations, receiving 100 inches (2.5 m) or more. The cooler, wetter conditions, coupled with the rugged terrain, hinder extensive agricultural development in the Highlands (Olsson 1981:3).

2.6 Flora and Fauna

The study area lies within an area of deciduous forests but most of it has been cleared for the construction of what is now STAS with landscaped areas and planned plantings.

2.7 Current Land Use and Recent Disturbances

The project area is part of what initially was Stewart Airfield which was established in 1941 to provide facilities for flight training of West Point cadets. Stewart Air Force Base was established in 1946 when the Air Force took over control of the airfield and the Army Substation remaining at Stewart. The STAS currently includes administrative buildings, housing and support structures. A radar station is situated on the summit of Prospect Hill on the western side of the Subpost. Most of the STAS buildings are vacant (Meyer et al. 1998).

2.8 Definition of Study Areas

The project area was subdivided into sections based on areas previously identified as archaeologically sensitive which were outlined in Section 2.1 (see also the Phase IA report by Meyer et al. 1998). Figure 2.1 depicts the study areas as redefined by PCI, consisting of the following:

Study Area 1. This includes a standing stone structure built in 1847 with later additions and known as the Sayre-McGregor House (Building 2606). An evaluation of the building resulted in its being considered ineligible to the National Register of Historic Places (Meyer et al. 1998:71). Until July 1999 the house served as an officer's residence. Also on the property is a modern garage but earlier maps indicate the presence of a saw mill near Beaver Dam Creek and North Jackson Avenue. The approximate area including the yard, which fronts on Sixth Street and the adjacent field near the tennis courts, is 4.2 acres (1.7 hectares).

Study Area 2. This area is identified as the potential location of a nineteenth and twentieth century homestead owned by T.M. Kernochan and later William Montgomery. It is located east of North Jackson Avenue and Beaver Dam Creek and south of Study Area 1. The estimated acreage is 2.0 acres (0.8 hectare).

Study Area 3. This 2-acre (0.8-ha) area is identified as the possible location of a nineteenth and twentieth century homestead owned first by J. Tilton and later by W.B. Tilton. It is located east of North Jackson Avenue and Beaver Dam Creek and south of Study Area 2. This area was not readily discernible during field investigations. Since it lies within the region of possible rockshelter locations, it was incorporated into the redesignated Study Area 8 during field testing.

Study Area 4. This 3-acre (1.2-ha) area is identified as the potential location of a nineteenth century homestead owned by Mrs. Denniston. It is located east of North Jackson Avenue and Beaver Dam Creek and south of Study Area 3. As with Study Area 3, this area was also not discernible during field investigations and was incorporated into Study Area 8.

Study Area 5. This area is identified as the possible location of a nineteenth century homestead owned by J. & B. Coleman and later by Ben Coleman and Thomas Conroy. It is located in the northwest portion of the project area north of Study Area 6, east of North Jackson Avenue and on both sides of Beaver Dam Creek.

Study Area 6. This area is identified as the location of a potential nineteenth century homestead owned by I. Belknap and later by heirs of B. Homan. It is located in the northwest section of the project area and south of Study Area 5, east of North Jackson Avenue and on both sides of Beaver Dam Creek. The estimated combined acreage of Study Areas 5 and 6 is 3 acres (1.2 hectares).

Study Area 7. This 3-acre (1.2-ha) area is identified as the possible location of an early twentieth century and probably late nineteenth century homestead owned by J. K. Alexander. It is located in the southeast portion of the project area, east of North Jackson Avenue and Beaver Dam Creek. STAS constructed a housing complex in this area but recently the houses were demolished leaving only concrete pads.

Study Area 8. The southwestern slopes of Prospect Hill were identified in the Phase IA report as an area that should be surveyed for prehistoric rockshelters. PCI combined this region with Study Areas 3 and 4 to facilitate field testing of the entire area, with an estimated acreage of 20 acres (8 hectares).

3.0 BACKGROUND RESEARCH

In 1996, John Milner Associates, Inc. (JMA) undertook a Phase IA investigation of the Stewart Army Subpost (Meyer et al. 1998). In their report, JMA reviewed "the prehistory of the area, the development and settlement of the local community, the initiation of flight training at West Point, the role of Stewart Field during World War II, and the post-war role of Stewart Field, Stewart Air Force Base, and Stewart Army Subpost" (Meyer et al. 1998:Abstract). The objectives of the study involved the identification of any known prehistoric sites, the evaluation of existing structures for inclusion in the National Register of Historic Places, and an assessment of the potential for locating additional prehistoric and historic cultural resources within the Stewart Army Subpost.

The authors concluded from their investigation that the Subpost offered a low potential for the identification of prehistoric settlements, although the southwest slopes of Prospect Hill could contain rock shelter locations. None of the existing buildings or structures were considered eligible to the National Register. All of the buildings, save the Sayre-McGregor house (built 1847), date from the military occupation of the Subpost onward. Eight areas (see Section 2.8, this report) were recommended as potential locations for historic house complex sites. In August 1999, PCI conducted a Phase IB investigation of the eight areas (see Section 5.0). For a detailed discussion of the history of the Subpost and the project areas please refer to the Phase IA report (Meyer et al. 1998).

4.0 METHODOLOGY

The field investigation within the STAS project area was conducted in accordance with the *Secretary of Interior's Standards and Guidelines for Archaeological Documentation* (Federal Register 48(190) National Park Service 1983), the *Treatment of Archaeological Properties* (Advisory Council on Historic Preservation 1980), and the *Standards for Cultural Resources Investigations and the Curation of Archaeological Collections in New York State* (New York Archaeological Council 1994).

4.1 STRATEGY

The Phase IA report prepared by John Milner and Associates, Inc. (Meyer et al. 1998) relied upon local environmental factors and a regional prehistoric and historic context to delineate eight areas of potential cultural resources within the entire STAS facility. Phase IB field testing was recommended for each of these areas.

PCI's field testing strategy is designed to locate all prehistoric and historic resources within these zones (Section 2.8). Potential prehistoric cultural resources include rockshelters. Potential historic cultural resources include remains associated with rural farmsteads. Representing the dwellings of former resident farm families, farmstead-related structures (e.g., field stone fencing) may have existed in some combination with associated outbuildings, fields and woodlands or pasture. This arrangement of structures would fit a settlement pattern of dispersed farmsteads characteristic of rural life in New York State at the close of the nineteenth century and the beginning of the twentieth century (Cinquino et al. 1997; Resnick 1996; Bulgrin 1992; Forman 1982).

4.2 FIELD SURVEY PROCESS

The field survey consisted of intensive surface and subsurface investigations of the entire project area. All accessible areas received an intensive surface inspection. Barriers to pedestrian survey included wetlands, bedrock outcrops, dense and thorny vegetation, areas of severe slope or disturbance. A pedestrian survey was conducted to identify areas suitable for subsurface testing within each study area. Shovel tests were placed at intervals of 50 feet (~15 meters). A judgmental distance between shovel tests was used when a standard transect or grid interval did not conform to topography or environmental conditions. An interval of 5 feet (1.5 m) was used to excavate additional shovel tests around positive shovel tests. If necessary, an extended grid based on this interval was developed.

Measuring approximately 16 inches (40 cm) in diameter, shovel test pits were excavated to culturally sterile soil or bedrock and backfilled to natural contour upon completion. Excavated soils were sieved through a ¼-inch hardware screen. Recovered cultural materials were bagged and labeled with shovel test number and pertinent provenience information. Field information for each shovel test was documented on detailed forms, recording transect and shovel test number, location, soil type, stratum and level, natural or man-made disturbances in the area, and recovered cultural

materials. Due to the density of artifacts collected within Area 1 and to better analyze the stratigraphy and significance of the resources, one excavation unit was placed within the tract. The unit was excavated in arbitrary levels within strata, with the stratigraphic and cultural-related information recorded on excavation level forms. Soil profiles and floor plans were drawn and photographed. Upon completion of the excavation, the unit was backfilled to its natural contour level. Supervisory personnel maintained daily field log books and assisted in photographing pertinent information such as man-made disturbances and environmental and cultural features. Field maps included measured drawings of the locations of transects and shovel tests, as well as general sketches. All shovel tests and identified features or sites were placed on area maps provided by the New York District U.S. Army Corps of Engineers.

4.3 Laboratory Analysis, Treatment and Curation

Cultural materials recovered from the excavated shovel tests and units were placed in plastic or paper bags and labeled with test number and pertinent provenience information. Each bag was assigned a number and listed according to provenience. Artifact bags are stored at the Buffalo Office of Panamerican Consultants, Inc. for processing and analysis. Following guidelines elaborated in 36 CFR Part 79 (Curation of Fedrally-owned and Administered Archaeological Collections), the processing of recovered artifacts followed general archaeological procedures of cleaning and storage. Disposition of artifacts for permanent curation will be coordinated with personnel from the New York District USACE and USMA at West Point.

5.0 RESULTS OF THE FIELD INVESTIGATIONS

Phase IB field investigations were conducted by Panamerican Consultants, Inc. during August 1999. As discussed in Section 2.8 of this report, the overall project area was divided into eight study areas to facilitate the field investigation (see Figure 2.1). Each study area is discussed individually (excepting Areas 3 and 4 which are part of Area 8).

A total of twenty-five transects were placed within the overall project area, covering the testable portions of the 100 acres (40 hectares) with 190 shovel test pits (STPs). The results of the field investigation by transect or group of transects within the study areas is discussed below. A shovel test log, ordered by site designation, area and transect, is provided in Appendix A. Artifacts recovered during the survey are discussed below and an inventory of recovered cultural material is presented in Appendix B.

5.1 SUMMARY OF FIELDWORK WITHIN STUDY AREA 1

Shovel Tests. After a pedestrian reconnaissance, eight transects (11 to 18) were located in the undisturbed portions of this study area (Figure 5.1). Two transects, 11 and 12, were placed between the western property fence line and the eastern side of the Sayre-McGregor house (Building 2606) and oriented north (Figure 5.2 and 5.3). To investigate potential cultural deposits associated with the historic house, shovel tests along these transects were placed at an interval of 25-ft (7.5-m). Additional shovel tests were excavated at a 5-ft (1.5-m) interval around the positive shovel tests STP 11.2, STP 11.5, STP 11.6 and STP 11.7 (Figure 5.4). Two other transects, 13 and 14, were placed north of the driveway across an open field of short grass also oriented northward (Figure 5.5 and 5.6). These transects terminated south of a small drainage channel. Shovel tests along these transects were placed at 50- ft (15- m) intervals. Transect 15 was placed northward across the open yard at the front of the property which faces Sixth Street to examine any disturbance due to grading. The testing interval of Transect 15 was 50 ft (15 m) (Figure 5.7) and continued north of the driveway (Figure 5.8). Three transects, 16, 17 and 18, were placed west of Beaver Dam Creek with a northward orientation and ending 74 feet (23 m) from "A" Street. Along each of these transects shovel tests were dug at a 50-ft (15-m) interval. A total of 56 shovel tests were excavated within Study Area 1: 25 shovel tests along Transect 11, 7 shovel tests along Transect 12, 4 shovel tests along Transect 13, 2 shovel tests along Transect 14, 6 shovel tests along Transect 15, 5 shovel tests along Transect 16, 5 shovel tests along Transect 17, and 2 shovel tests along Transect 18.

Twenty-one shovel tests were excavated until culturally sterile soil was reached; seven shovel tests were terminated due to the presence of a rock impasse; and ten shovel tests were terminated due to a root impasse (see Appendix A). Sixteen shovel tests were terminated due to disturbance based on the presence of modern artifacts, road gravel and fill or an indication that the subsoil comprised the top stratum (Figures 5.9 and 5.10). A total of 35 (63 percent) shovel tests contained disturbed soils.

Soils encountered within the shovel tests are characterized as glacial till with fill and contain two strata (Appendix A). Stratum 1 is predominantly various hues of brown (light yellowish brown and

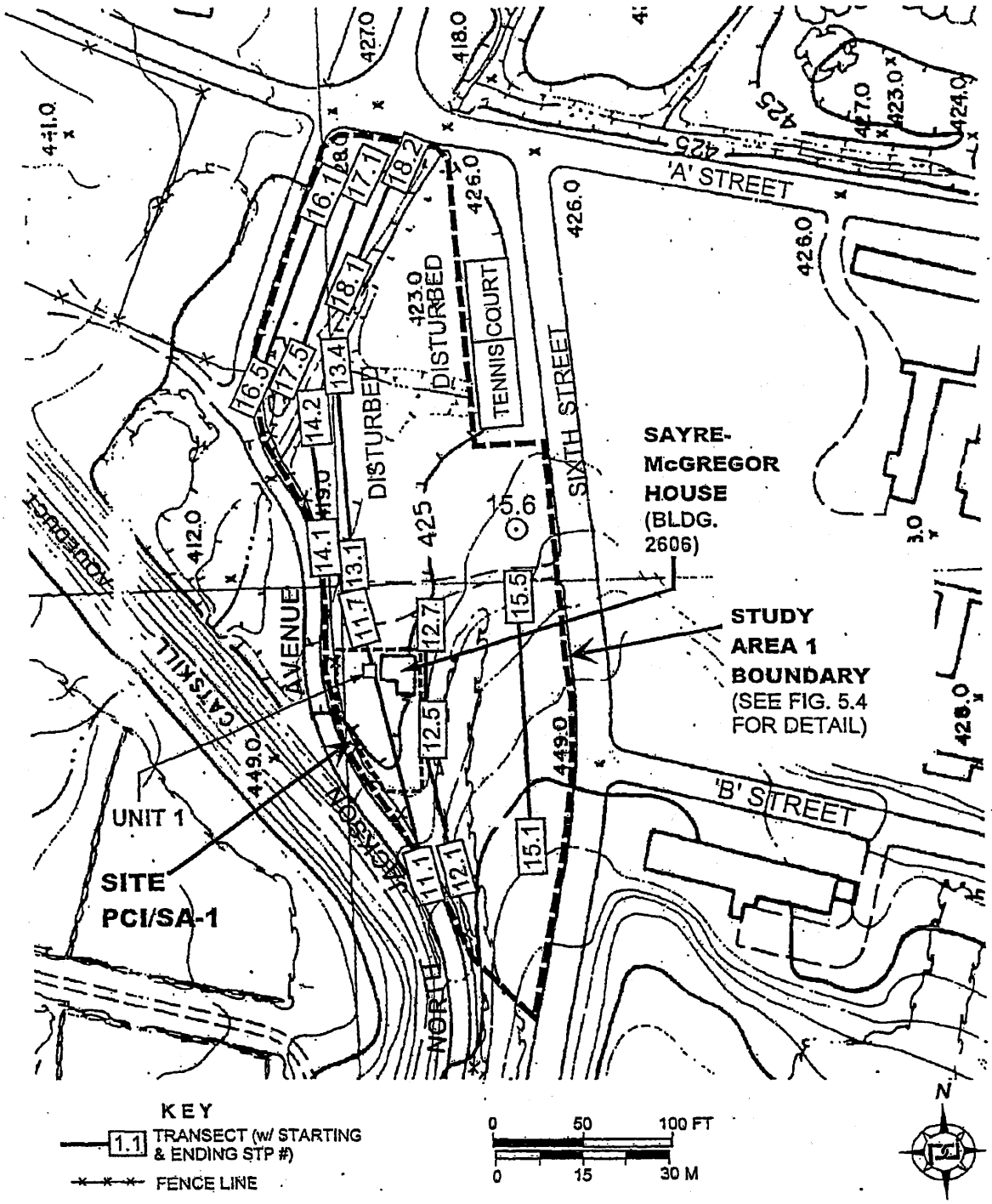


Figure 5.1. Study Area 1: location of Site PCI/SA-1, Transects 11-18, and Unit 1 *(adapted from Sells 1973).*

Figure 5.2. Study Area 1: crew member excavating STP 11.7+0'N 5'E within Site PCI/SA-1, with Sayre-McGregor house (Bldg. 2606) at left, taken from driveway facing southwest *(Burt 1999)*.

Figure 5.3. Study Area 1: south side of fieldstone Sayre-McGregor House with white clapboard addition and crew member excavating STP 12.4, taken near STP 12.3, facing north *(Burt 1999)*.

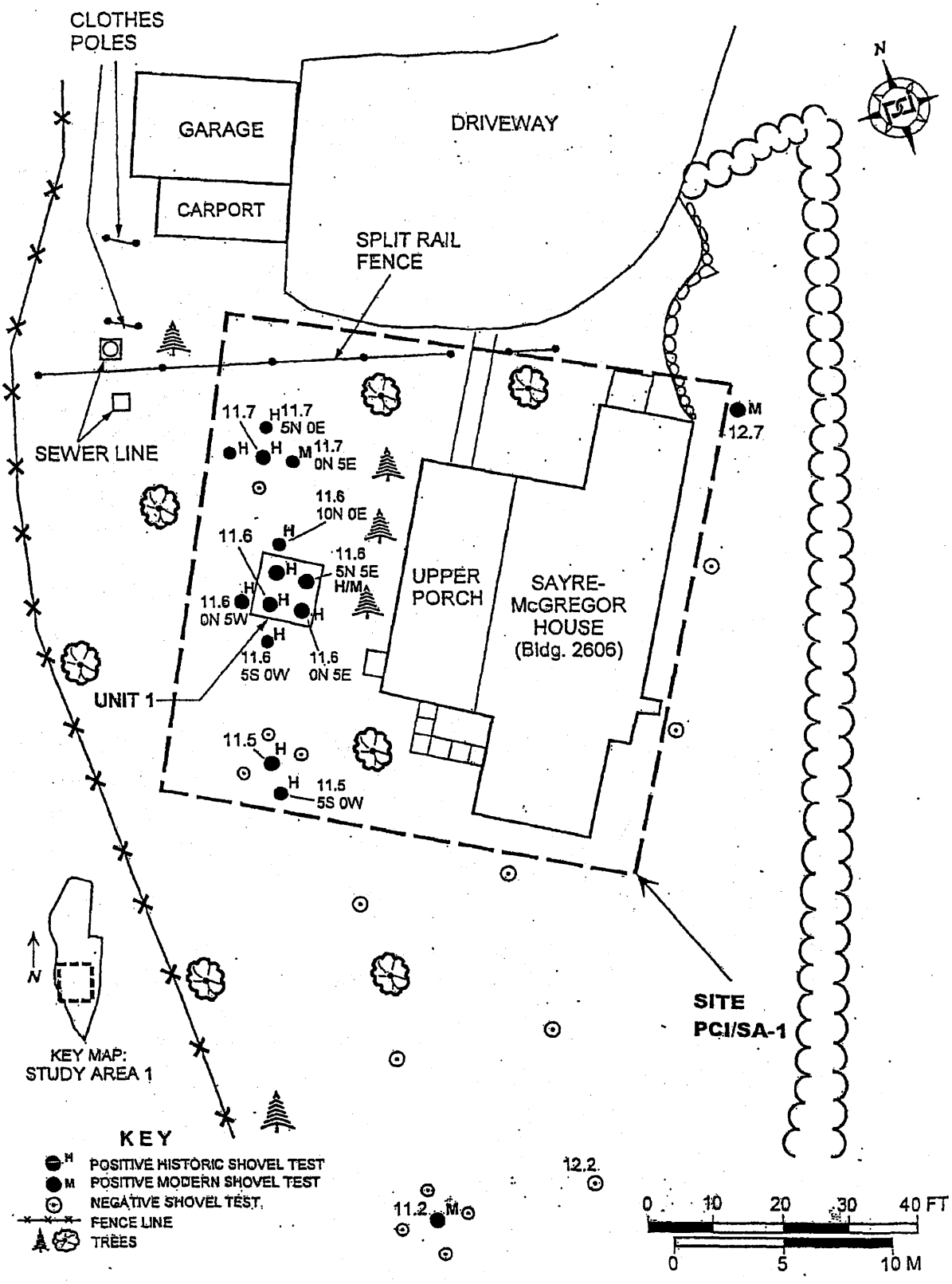


Figure 5.4. Study Area 1: location of shovel tests and Unit 1 within Site PCI/SA-1.

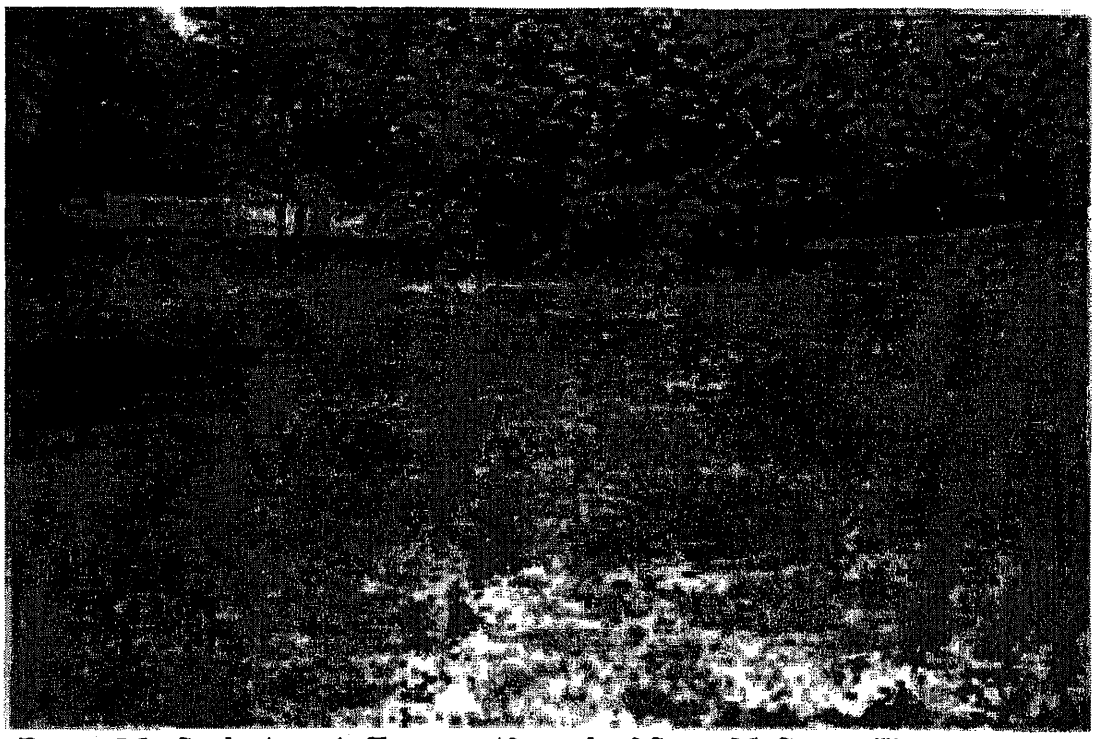


Figure 5.5. Study Area 1: Transect 13 north of Sayre-McGregor House and south of channelized stream, taken from STP 13.1, facing north *(Burt 1999)*.

Figure 5.6. Study Area 1: Transect 14 north of Sayre-McGregor House and south of channelized stream, taken from STP 14.1, facing north *(Burt 1999)*.

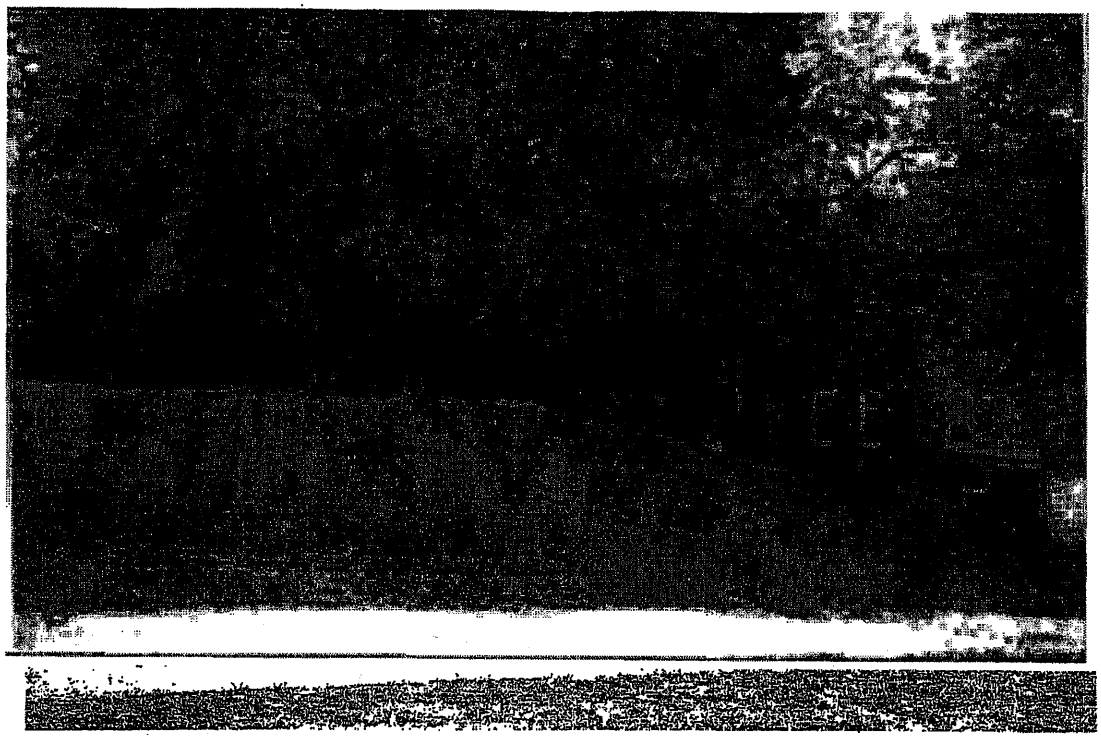


Figure 5.7. Study Area 1: landscaping and grading along eastern side of Sayre-McGregor House, taken near STP 15.6, facing southwest *(Burt 1999)*.

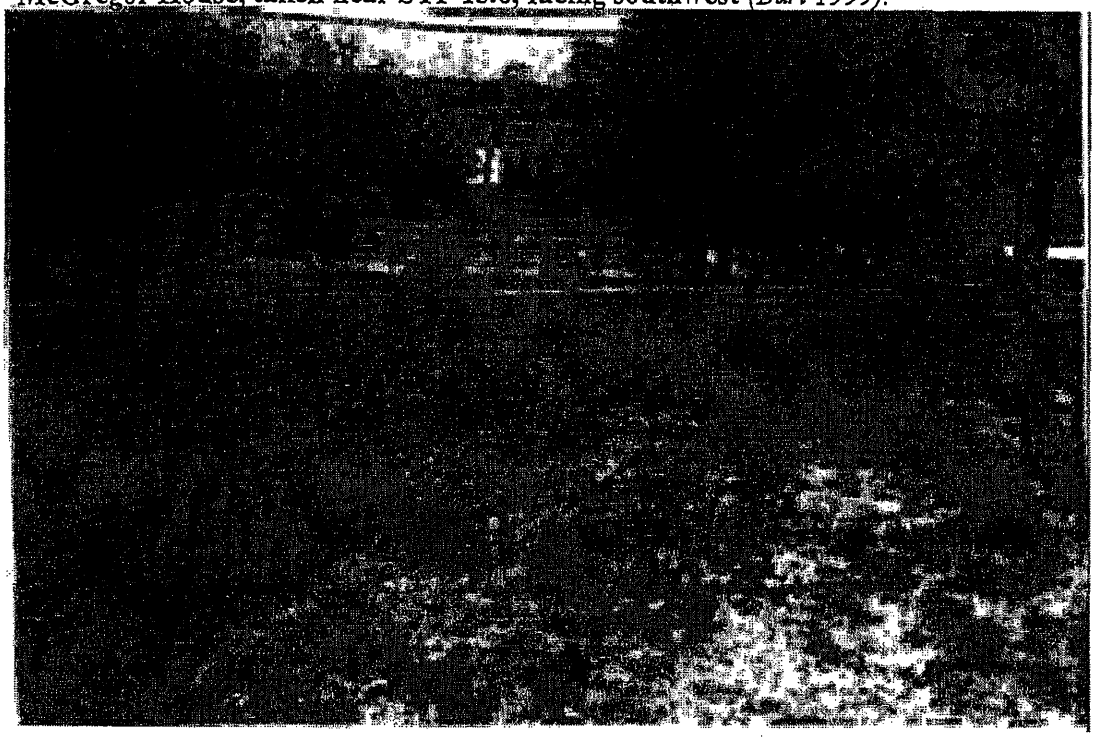


Figure 5.8. Study Area 1: graded lawn north of Sayre-McGregor House, taken from STP 15.6, facing north *(Burt 1999)*.

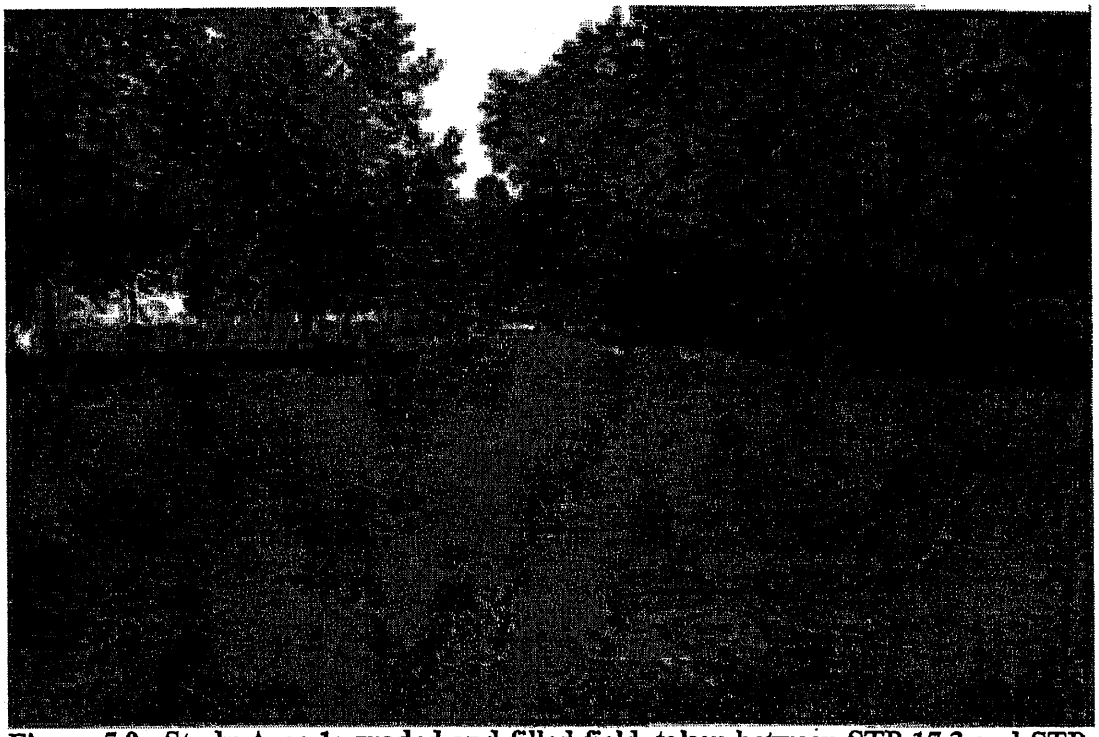


Figure 5.9. Study Area 1: graded and filled field, taken between STP 17.3 and STP 18.1, facing northeast *(Burt 1999).*

Figure 5.10. Study Area 1: indications of disturbances such as push piles and grading south of STP 16.1, facing west with North Jackson Avenue in background *(Burt 1999).*

pale brown to dark yellowish brown), ranging from one to twenty inches deep, with an average depth of 6 inches (15 cm). The primary soil matrix consists of silt appearing singularly or to a lesser degree in combination with loam or sand. Clay appears in two shovel tests (STPs 17.4 and 18.1) and may represent graded subsoil. Stratum 2 comprises the subsoil and can be found in eleven shovel tests and ranges in depth from 1 to 15 inches (2.5 to 25 cm). Stratum 2 soils are predominantly silts including hues of pale brown silt and yellowish brown silt with pale brown silt followed by light yellowish brown silty loam or sandy silt and light yellowish brown clay also occurring. Inclusions of gravel and rocks are found in both Stratum 1 and Stratum 2 and in this area are indicative of disturbance from fill particularly in Transect 15.

A total of one hundred and seventy (170) artifacts were recovered from the shovel tests within this study area (Appendix B). Modern artifacts include the following thirteen items: one fragment of modern sewer tile from STP 12.7; one fragment of brown container glass and one blue-green glass fragment from STP 11.2; two fragments of brown bottle glass from STP 11.7+0'N 5'E; one fragment of clear window glass from 11.6+5'S 0'W; one glass button from STP 11.6+0'N 5'W; one aluminum nail from 11.6+0'N 5'E; two sherds of black clay pigeon shooting targets from STP 11.6+ 0'N 5'E, and two cartridge shells, one each from 11.6 +0'N 5'E, and 11.7+0'N 5'E. All of these objects were recovered from Stratum 1 with the thirteenth fragment of clear safety glass recovered from Stratum 2 in STP 11.2.

The majority of the artifacts recovered from this study area are historic, but the assemblage includes some materials that may be modern as well as historic, such as plain whiteware. All of the historic-designated materials were recovered from Stratum 1 of shovel tests located in Transect 11 adjacent to the western yard of the Sayre-McGregor house. Historic ceramics comprise the largest class of artifacts (numbering 63) which includes a variety of types described below.

Salt-glazed stonewares consist of four body sherds with one gray body sherd decorated with cobalt blue recovered from STP 11.6; two gray body sherds with a dark interior (reddish or dark brown) from STPs 11.6+5'S 0'W and 11.6+0'N 5'E; and one plain sherd from STP 11.7+0'N 5'W. Ten red earthenware body sherds were recovered which consists of eight plain lead glazed body sherds (one from STP 11.6, one from STP 11.6+5'S 0'W, and six from STP 11.6+10'N 0'E), and two lead glazed red earthenware body sherds with a black exterior and interior from STP 11.6. The sample's refined earthenwares include creamwares, pearlwares and whitewares. Three possible creamware body sherds were recovered: one from STP 11.6+0'N 5'E and two from STP 11.7+0'N 5'W; pearlwares are limited to two polychrome body sherds from STP 11.6+5'N 5'E. Whitewares constitute the predominant type of artifact class as well as the majority of the historic ceramics found in the shovel tests from Study Area 1. Thirty-one plain sherds were encountered including one body fragment from STP 11.5, six body sherds from STP 11.6; three basal sherds from STP 11.6+10'N 0'E, three body sherds from STP 11.6+0'N 5'W, four body sherds from STP 11.6+5'S 0'W, four body sherds from STP 11.6+5'N 0'E, one body sherd from STP 11.6+0'N 5'E, seven body sherds from STP 11.6+10'N 0'E, one body sherd from STP 11.6+10'N 5'E and two sherds from STP 11.6+ 5'N 5'E.

Nine decorated whitewares were recovered: seven transfer-printed whiteware body sherds (two blue and one black from STP 11.6+5'S 0'W, three blue from STP 11.6+0'N 5'E and one blue from STP 11.6+5'N 5'E); one blue shell-edged rim sherd from STP 11.6, and one body sherd of banded annular whiteware from STP 11.6+0'N 5'W. The remaining sample ceramics comprise one body sherd of plain ironstone from STP 11.7+5'N 0'E; one body sherd of yellowware from STP 11.6+5'N 0'E; and two plain porcelain body sherds, one each from STP 11.6 and STP 11.6+0'N 5'E. Ceramic construction material tallied to thirty-seven fragments of red brick from various shovel tests.

The 56 other historic artifacts recovered from the shovel tests include glass, metal, faunal and slate remains. Three fragments of blue-green tinted window glass were found in STP 11.6, STP 11.6+0'N 5'W and STP 11.6+5'N 0'E and one fragment of green container glass was recovered in STP 11.6+0'N 5'W. Three fragments of clear glass considered to be twentieth century but may be either historic or modern were recovered, all from STP 11.6+5'N 0'E. One flat clear glass fragment was also noted in STP 11.7 5'N 0'E. Two machine-cut nail fragments were found in STP 11.6 and STP 11.6+5'N 5'E and six miscellaneous metal (probably nail) fragments were noted from STP 11.5 and STP 11.6+5'N 0'E. Faunal material comprises five hard shell clam fragments (three from STP 11.6, two from STP 11.6+5'N 5'E); nine mammal bone fragments including cow (three from STP 11.6; five from STP 11.6+0'N 5'E; one from STP 11.6+10'N 0'E), two mammal cow or pig teeth from STP11.6+10'N 0'E, and a possible bone fragment from STP 11.6 5'N 5'E. Miscellaneous material includes one slate roofing tile fragment from STP 11.6+10N 0E; two pieces of coal/slag, one each from STP 11.5+5'S 0'W and STP 11.6; and 20 mortar/plaster fragments from STP 11.5+5'S 0'W.

Units. To assess the concentration of artifacts and the mottled or disturbed soils around STP 11.6, Excavation Unit 1 (EU 1) was placed around this shovel test. Encompassing STP 11.6 in the southwest corner, STP 11.6+5'N 0'E in the northwest corner, STP 11.6+5'N 5'E in the northeast corner and STP 11.6+0'N 5'E in the southeast corner of the unit, the unit measured 6.5 feet east/west by 7 feet north/south (2-x-2.1-m) (Figure 5.11). The highest ground elevation was the southeast corner which was designated as the unit datum. All soil from the shovel test backfilling was removed and the sod in the unit was also removed. The unit was divided into quadrants, with Quadrant A located in the southeast corner, Quadrant B in the southwest, Quadrant C in the northeast and Quadrant D in the northwest corner. Since a high concentration and variety of artifacts were recovered from STPs 11.6 and 11.6+0'N 5'E, the southern half of the unit was opened first. Excavation in each quadrant was performed in arbitrary 10-inch (25-cm) levels within natural strata when possible, first with a flat-ended shovel, then by trowel, since the soil appeared to be loose to moderately compacted fill. Only Quadrants A and B were excavated. All soil removed from the unit was screened through ¼-in hardware mesh. All recovered artifacts were bagged and labeled with the stratigraphic/cultural relevant information recorded. Modern materials such as window glass were noted and discarded in the field while other artifacts (e.g., modern buttons) were discarded after laboratory analysis. After excavation, forms were completed, photographs taken and the unit was manually backfilled.

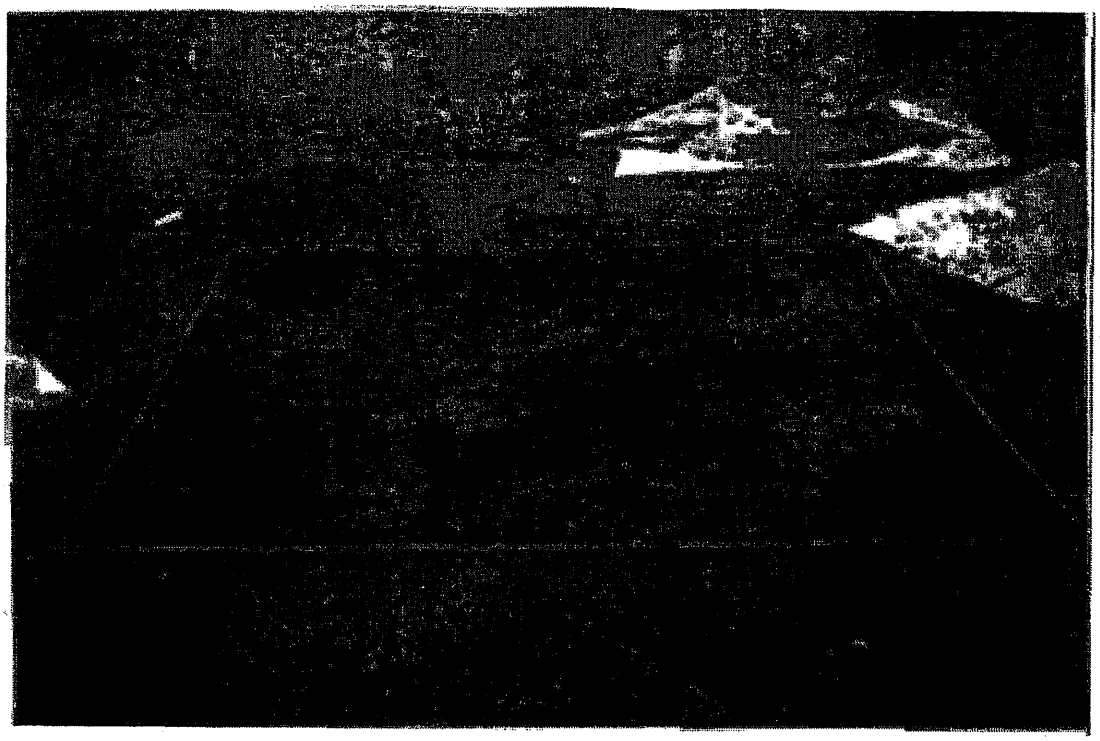


Figure 5.11. Site PCI/SA-1 in Study Area 1: opening view of Unit 1, facing west *(Burt 1999)*

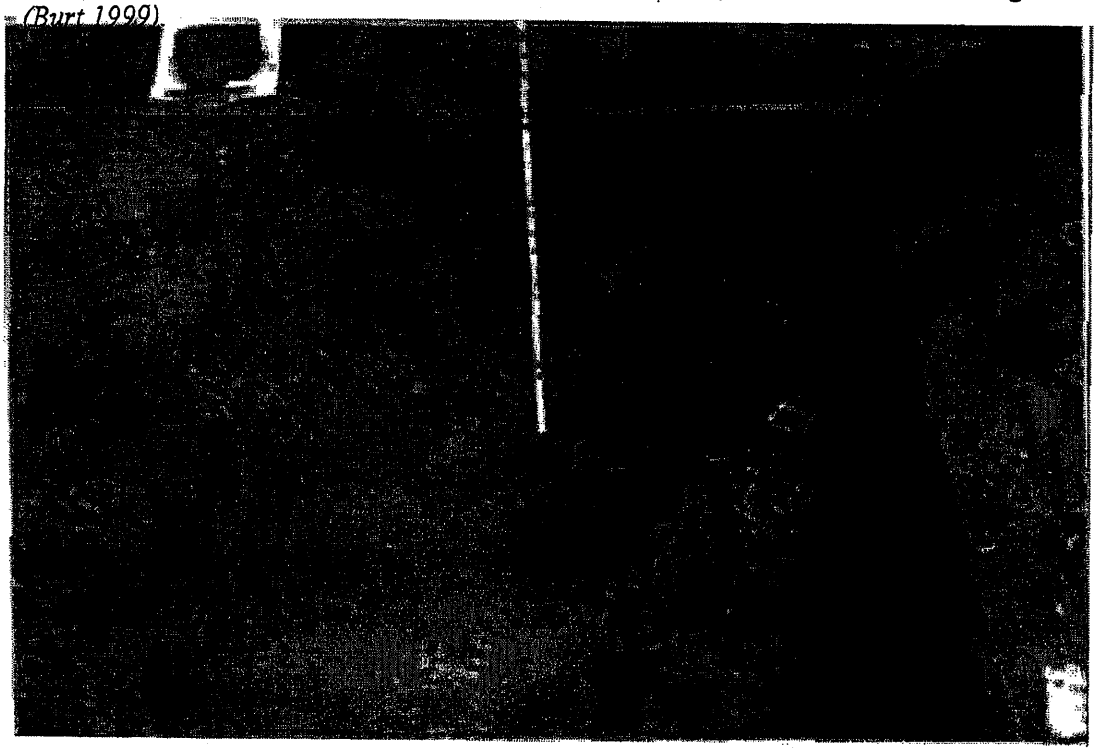


Figure 5.12. Site PCI/SA-1 in Study Area 1: closing view of Unit 1, with rubble fill of Feature 1 visible in south (right) wall, facing east *(Burt 1999).*

The excavation of EU 1 resulted in the removal of three levels within Stratum 1. Soils from these levels can be characterized as a matrix of topsoil composed of very dark grayish brown silty loam mixed with fill. Within Stratum 1/Level 2 of Quadrant A a large pocket of mottled dark brown silty loam, very dark grayish brown silty loam, and yellowish brown silty loam with bricks, mortar and stone rubble was identified as Feature 1. This feature was followed down into Stratum 1/Level 3 when subsoil of brownish yellow clayey silt was encountered within Quadrant A at 24-in (61-cm (Figures 5.12, 5.13 and 5.14). The remaining portion of Quadrant B was not excavated since the feature was considered to represent fill. The brick, mortar and stone which may have been associated at one time did not have any discernable cultural integrity at the time of excavation.

Artifacts recovered from EU 1 were similar to those found within the surrounding shovel tests and all were recovered from Stratum 1 (Appendix B). A total of 123 non-feature artifacts were recovered from Stratum 1/Level 1 of Quadrant A and Stratum 1/Levels 1 and 2 of Quadrant B. Ceramics account for approximately half of the sample with 68 sherds, consisting of: one stoneware body sherd; seven lead-glazed redware fragments (four plain lead-glazed, two lead-glazed sherds with a dark brown to black exterior and interior; one lead-glazed trail-slipped sherd; nineteen plain whiteware sherds; seven blue or green transfer-printed whiteware sherds; two body sherds of black or brown annularware whiteware; four blue or green shell-edged whiteware rim sherds; one hand-painted whiteware sherd; seven yellowware sherds; three ironstone sherds; one creamware sherd, six plain pearlware sherds; four decorated pearlware sherds, and six porcelain sherds including one with remnants of polychrome overglaze. Four historic glass fragments were observed along with five corroded nail fragments. Twenty-five copper alloy "bullet buttons" measuring 0.3 inch in diameter were found in Stratum 1/Level 2 of Quadrant B. The recovered faunal material comprises ten hard shell clam fragments, one oyster shell fragment, and two mammal bone fragments. The Miscellaneous category includes three pieces of coal or slag; four mortar or plaster fragments, and one slate roofing tile fragment with a nail hole.

One hundred and thirty-nine artifacts were recovered from Feature 1 within Stratum 1/Levels 2 and 3 of Quadrant A. The artifacts classes and types are distributed as follows: 23 ceramic sherds consisting of one stoneware sherd; five lead-glazed, red earthenware sherds (two brown lead-glazed sherds, one lead-glazed trail-slipped, one lead-glazed brown to black top with knob handle and one lead-glazed rim sherd); one unglazed flower pot sherd; four plain pearlware sherds; 21 whiteware sherds (12 plain whiteware sherds, five transfer-printed whiteware, two shell-edged, and two annular sherds); one yellowware body sherd and three porcelain sherds (one with remnants of overglazed polychrome, and two plain). Non-ceramic artifacts comprise: 64 red brick fragments excluding several larger fragments left in the feature wall; seven unidentifiable nail fragments; one green tinted window glass fragment; 27 faunal specimens (14 hard shell clams, 10 mammal bones, three mammal teeth) and miscellaneous material which consists of four fragments of mortar or plaster.

All of the artifacts recovered from EU 1 are considered nineteenth century but it is problematic to attribute tighter chronology to the cultural deposit since items such as whiteware and yellowware ceramics were also manufactured into the twentieth century. The pearlware ceramics, especially

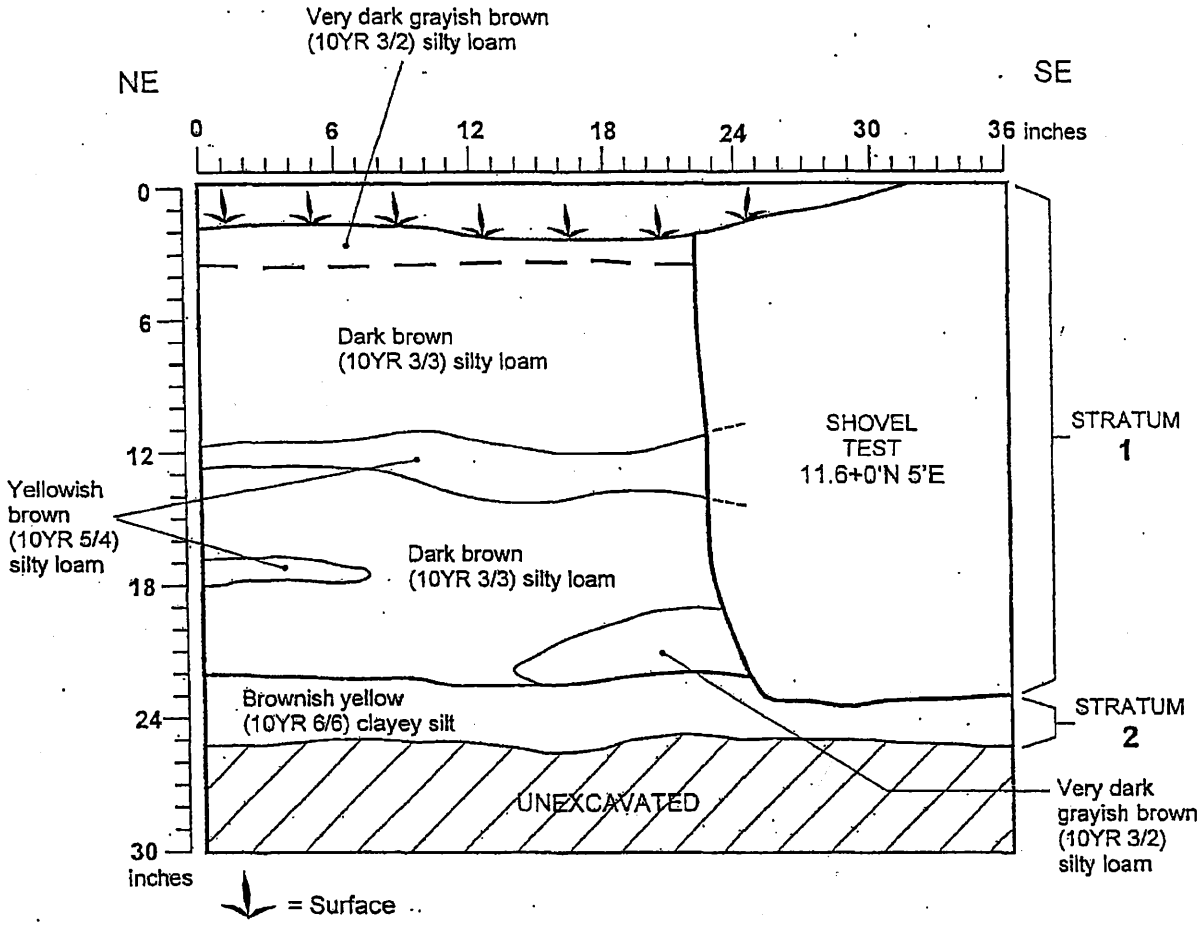


Figure 5.13. Site PCI/SA-1 in Study Area 1: east wall profile of Unit 1, Quadrant A, indicating levels of fill.

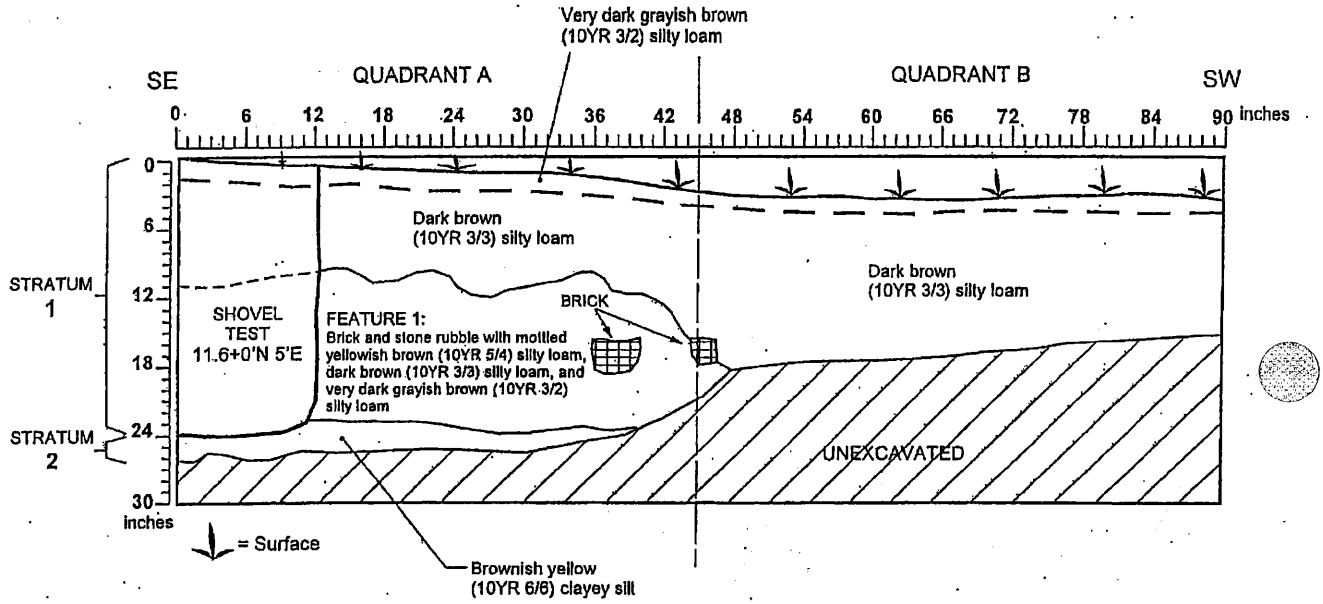


Figure 5.14. Site PCI/SA-1 in Study Area 1: south wall profile of Unit 1, indicating rubble fill above and including Feature 1.

painted sherds, are generally attributed to being manufactured in England between 1815 to 1835 (Noël Hume 1970:129) which would predate the Sayre-McGregor house (*ca.* 1847). The dating and association of pearlwares and date of historic household occupation need not be called into question if consideration is given to delay between production in England and use in the United States. Also earlier than the household occupation date is the presence of possible creamware sherds from the shovel tests, an item which was manufactured in England by 1763 but lost in popularity to the pearlwares by the late 1700s (Nöel Hume 1970). The general chronological placement of the artifacts is that of post-1850s into the late nineteenth century and possibly into the twentieth century. The size of the artifacts (less than two inches except for brick fragments) also precludes a detailed analysis and further is a possible indication that the non-feature materials represent historical fill. Feature 1 is also considered historical fill and is probably associated with the upper levels, but whether all the materials are associated directly with the Sayre-MacGregor house is difficult to assess. The artifacts do not derive from the type of stratigraphic context such as a buried horizon that would indicate a clear, direct connection. The materials may also be from the remodeling of the house and nearby later construction in the area, signifying a period other than that of the historic occupation of the residence. The concentration of artifacts within Transect 1.1 and EU 1 along with the Sayre-MacGregor house have been designated PCI/SA-1 (see Figure 5.4).

5.2 Summary of Fieldwork within Study Area 2

Shovel Tests. Three transects (20, 21 and 22) were located within this study area with a total of 34 shovel tests placed between North Jackson Avenue and Sixth Street on either side of an intermittent stream (Figure 5.15). Current conditions include a wooded terrain of secondary growth with a few older trees sloping uphill in the eastern portion of the study area. The top of the hill is graded, probably in association with the Five Star Inn and parking lot adjacent to the study area. The western edge of the study area along North Jackson Avenue has indications of disturbance (Figures 5.16 and 5.17) and the Town of New Windsor has a pumping station within the study area with access from North Jackson Avenue (Figure 5.18). Transect 20 was placed 45 ft (14 m) east of North Jackson Avenue and oriented north to south. STP 21.1 was placed on a small terrace 50 ft (15 m) from STP 20.1 and Transect 22 was placed on an upper terrace with STP 22.1 located 55 ft (17 m) from STP 21.5. Since the transects followed the terraces it was not always possible to maintain a 50-ft (15-m) interval between shovel tests. The southern end of the study area was strewn with cinder blocks, ceramic insulators, tires, pieces of cement, broken beverage bottles, metal wires, and old telephone wires (Figure 5.19). Three apple trees were also noted in the southern portion of the study area.

Shovel tests within this study area contains glacial till with two strata (Appendix A). Only STP 22.5 shows evidence of a third stratum. Stratum 1 consists predominantly of silt as a single component (22 shovel tests) and in minor combinations with loam (eight shovel tests), sand (four shovel tests) and averages 8-in thick (20-cm). Soil colors range from pale brown and light yellow brown to very dark gray and very dark grayish brown. Stratum 2 is identified as subsoil and is encountered in eight shovel tests (STPs 20.6, 21.1, 21.2, 21.3, 21.5, 22.2, 22.4, 22.5). The soils consist of brown silty

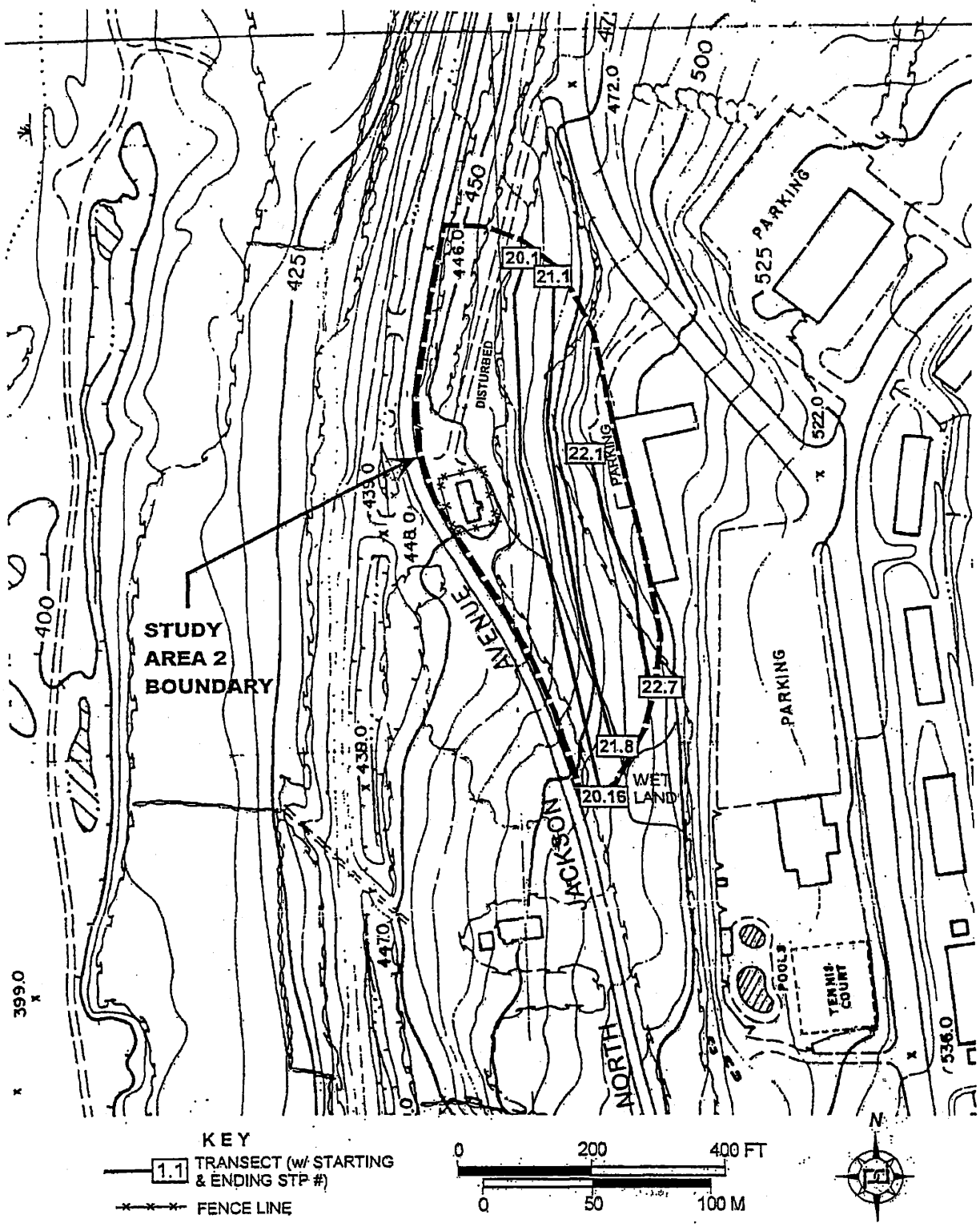


Figure 5.15. Study Area 2: location of Transects 20, 21, and 22 and areas of disturbance *(adapted from Sells 1973)*

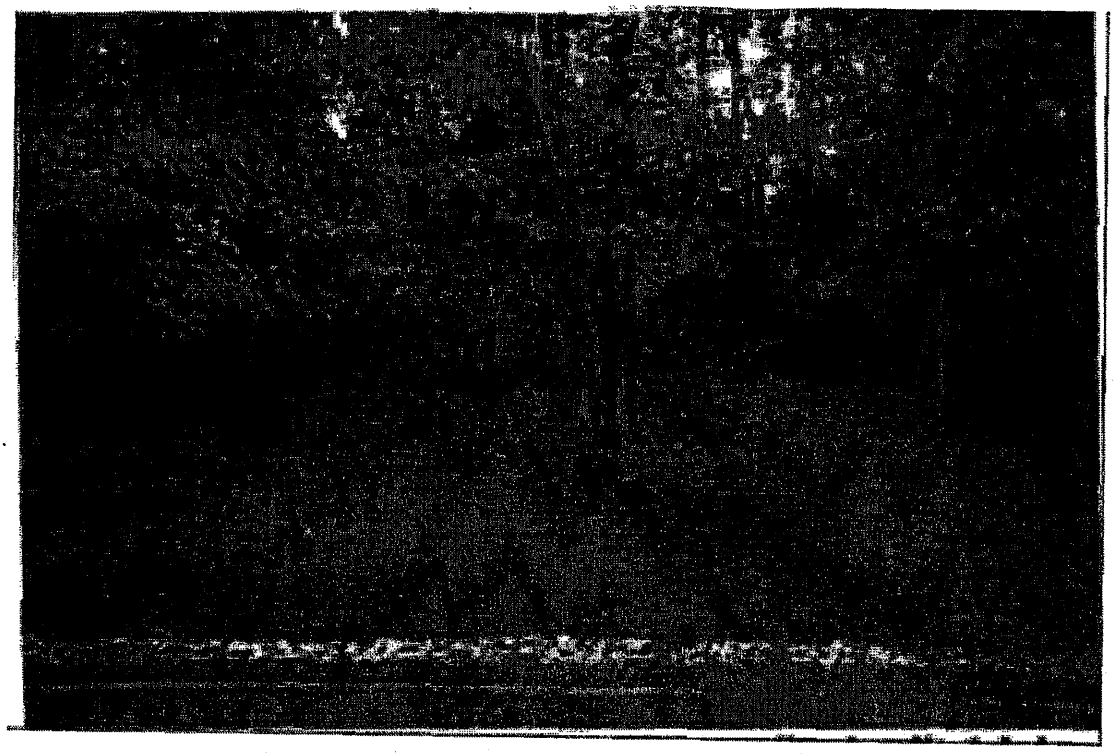


Figure 5.16. Study Area 2: area of disturbance due to grading along North Jackson Avenue in western section of study area, facing east *(Burt 1999)*.

Figure 5.17. Study Area 2: area of disturbance due to road construction along North Jackson Avenue in western section of study area, facing north *(Burt 1999)*.

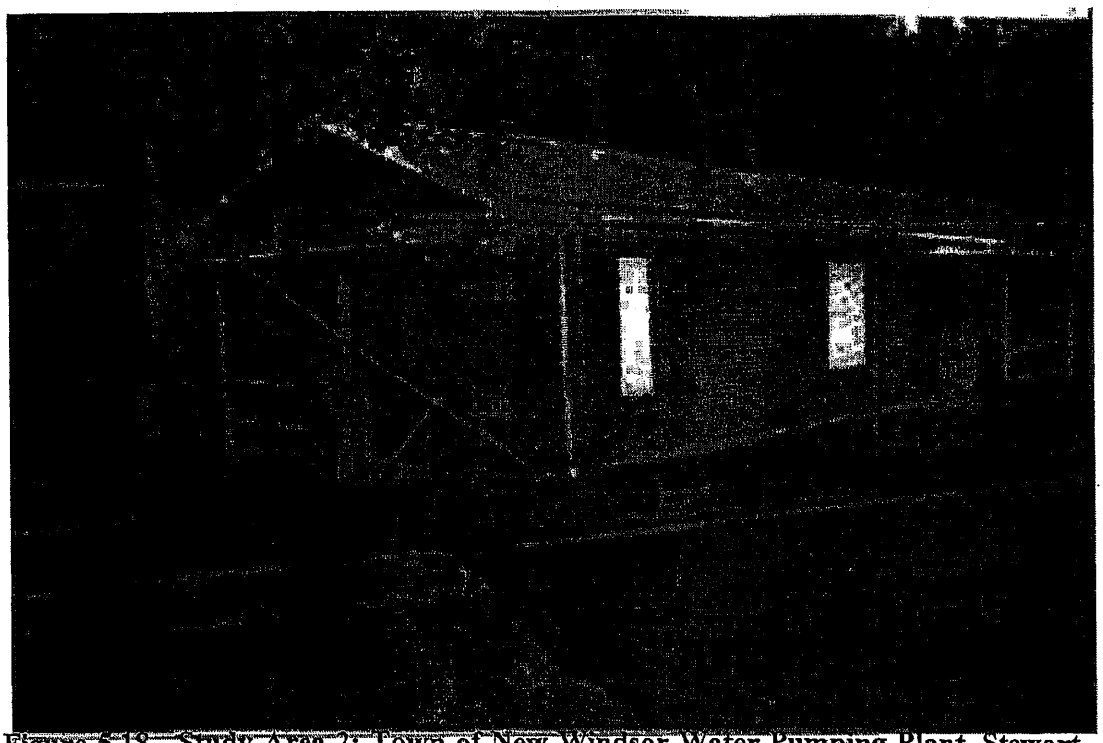


Figure 5.18. Study Area 2: Town of New Windsor Water Pumping Plant, Stewart Airport Division Building 2604, facing southeast *(Burt 1999)*.

Figure 5.19. Study Area 2: modern debris including concrete slab in center of photograph as well as dumped cinder blocks, taken near STP 22.6, facing northeast *(Burt 1999)*.

sand or sandy silt, pale brown silt and pale brown clay which were all encountered less than eight inches below ground surface. A third stratum is identified within STP 22.5 and is characterized by pale brown silt at a depth of 6 to 10 in (15 to 25 cm). Sixteen shovel tests were terminated due to the presence of a rock impasse, while six were terminated due to a root impasse. Regardless of the reason for termination, a total of 21 (62 percent) shovel tests had indications of disturbance either from soil or the presence of modern artifacts. The terrain of the study area is disturbed and subject to erosion.

As noted above, Study Area 2 is strewn with modern debris. All the cultural material encountered within the shovel tests (26 items) are identified as modern materials (post-1950) (Appendix B). These materials include: an aluminum can pull tab and a small fragment of mortar from STP 20.4; container glass of various colors from STP 21.2; aluminum beer cans and a glass marble from STP 21.2; a piece of aluminum foil from STP 21.3; beverage bottle and round nail fragments from STP 21.6; fragments of concrete from STP 22.2, drainage tile fragment from STP 22.3, and concrete from STP 22.5.

5.3 Summary of Fieldwork within Study Area 5

Shovel Tests. This study area encompasses storage and parking facilities and an area of older trees along North Jackson Avenue with grasses and low brush as well as push piles of soil and gravel and secondary growth such as sumac (Figures 5.20 and 5.21). Due to the large amount of disturbance only one transect (Transect 19) was placed within this area, located 50 ft (15 m) from North Jackson Avenue and 46 ft (14 m) from the western chain-link fence (Figure 5.22). A total of five shovel tests were excavated to an average depth of eight inches (20 cm) and only one stratum was identified (Appendix A). Stratum 1 is not consistent and indicates disturbance in the area. The soils within the shovel tests included mottled dark gray brown and light yellowish brown silty loam with rocks, gravel and asphalt; brown silt and dark grayish brown silt with rocks and gravel; brown sandy silt and brown silty clay with rocks. Three of the shovel tests (STPS 19.2, 19.3 and 19.5) were terminated due to rock impasses. The only cultural materials recovered within the shovel tests were concrete and asphalt fragments and were discarded in the field (STPs 19.1 and 19.4, Appendix B). Due to the nature of the soils and cultural materials all shovel tests indicate significant subsurface disturbance.

5.4 Summary of Fieldwork within Study Area 6

Gravel parking areas and buildings associated with vehicle repair prevented subsurface testing within this study area (see Figures 5.22 and 5.23). Outside the fenced area a few open areas of grass, wetlands and a channelized stream are present (Figure 5.24). These subareas indicated disturbance; therefore no subsurface testing was conducted within these areas.

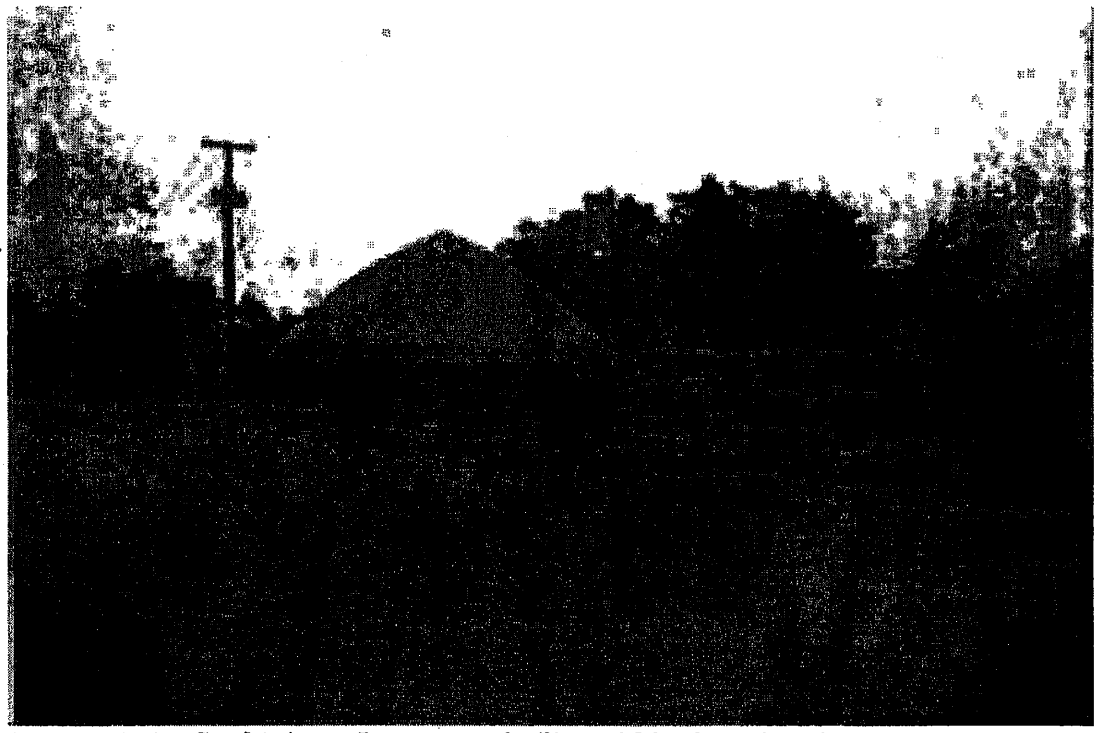


Figure 5.20. Study Area 5: storage facility within fenced and graded area, taken from northwest corner of study area, facing southeast *(Burt 1999).*

Figure 5.21. Study Area 5: graded area along Transect 19, from STP 19.4, facing east *(Burt 1999).*

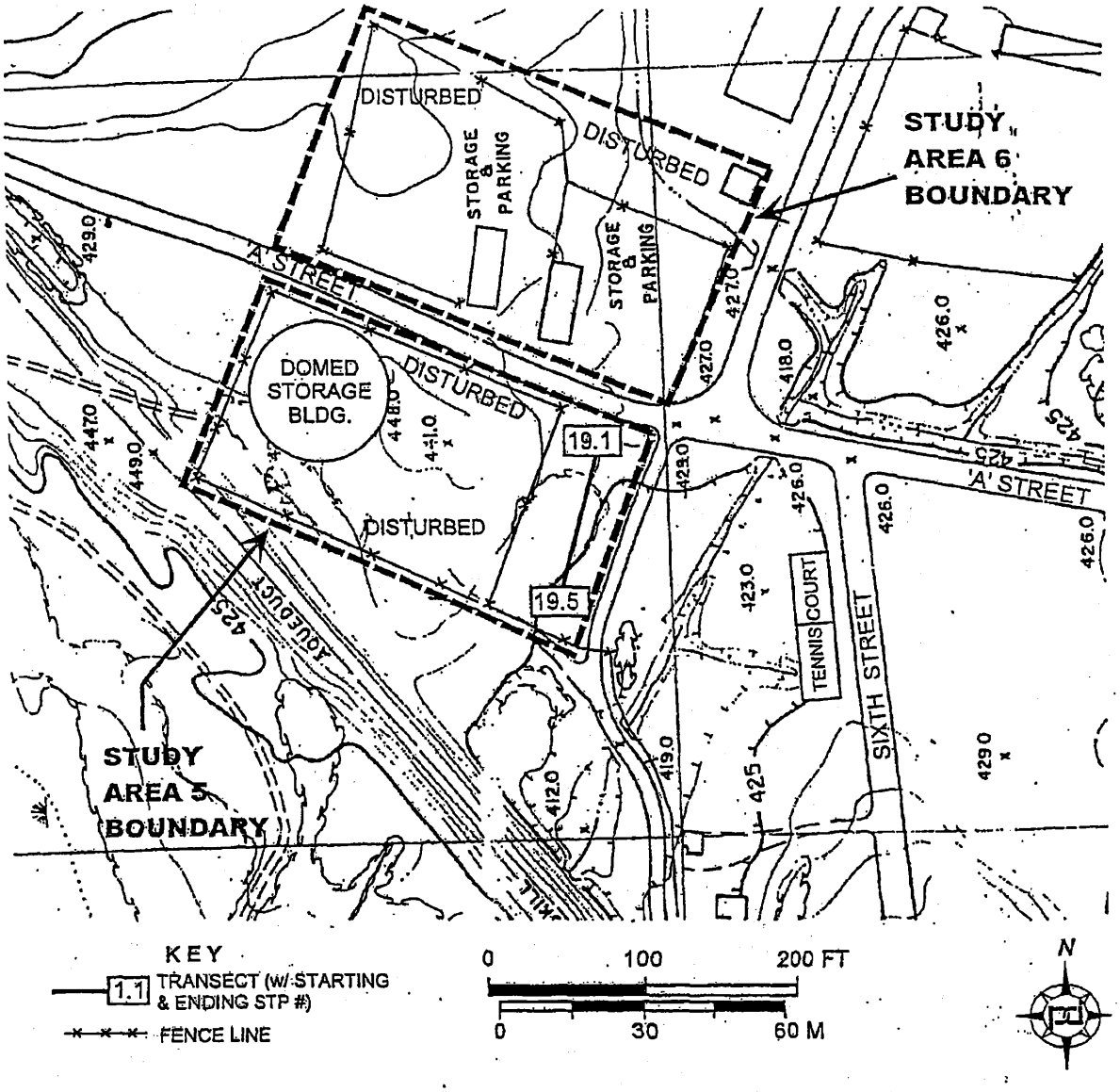


Figure 5.22. Study Areas 5 and 6: location of Transect 19 and disturbed areas *(adapted from Sells 1973).*

Figure 5.23. Study Area 6: vehicle storage and parking area, taken from southeast corner of study area, facing southwest *(Burt 1999).*

Figure 5.24. Study Area 6: channelized stream and chainlink fence to vehicle storage and parking area, taken from northeast corner of study area, facing northwest *(Burt 1999).*

5.5 Summary of Fieldwork within Study Area 7

Shovel Tests. This area encompasses a wooded area bordered by a former housing development with visible remnants of concrete pads, paved paths and parking lots (Figures 5.25, 5.26 and 5.27). The study area is bisected by three asphalt trails that lead to a gate adjacent to North Jackson Avenue and continues to Little Britain Elementary School. Several stone fences are also found within the wooded section. The study area is strewn with asphalt chunks and other modern debris such as clear glass, cut pieces of wood and plastic toys. Transects 1 through 10, containing a total of 36 shovel tests, were oriented northeast to southwest from the southern edge of a concrete pad and extending to a chain-link fence which runs along North Jackson Avenue. Shovel tests were dug to an average depth of seven inches (18-cm) (Appendix A). Thirty shovel tests contained inclusions of rocks and gravel and consequently were terminated, while three shovel tests were terminated due to a root impasse.

Soils encountered within the shovel tests consist of two strata (Appendix A). Stratum 1 in 14 shovel tests is predominantly silt ranging in color from dark grayish brown to brown and pale or yellowish brown. Silty loam is found within five shovel tests ranging in color from grayish brown, brown and yellowish brown. Eight shovel tests contain a combination of brown silt and sand. The thickness of Stratum 1 averages 6 inches (15 cm). Stratum 2 is characterized by light yellowish brown silt in five shovel tests (STPs 1.4, 1.5, 2.6, 4.3, 4.4, and 7.2). As in the previously discussed case of Stratum 1, a significant percentage of the tests also exhibited variation with nine shovel tests having the same type of soil but with a different chroma—for example 10YR 6/3 pale brown instead of 10YR 6/4 light yellowish brown. Overall, 34 (92 percent) of the shovel tests in Study Area 7 reveal subsurface disturbance.

Cultural materials recovered from shovel tests within this study area were all designated as modern and included construction materials (i.e., asphalt and window glass) and a bullet cartridge (STPs 2.1, 3.3 and 8.3, Appendix B).

5.6 Summary of Fieldwork within Study Area 8

Shovel Tests. As noted in Section 2.8, this study area incorporates three areas previously defined by the Phase IA report (Meyer et al. 1998)—Study Area 8, a potential prehistoric rockshelter tract and Areas 3 and 4, potential historic household sites (Figure 5.28). A grass and gravel access road adjacent to the telephone line bisects the study area dividing it into east and west sections (see Figure 5.28; Figure 5.29). A total of three transects (Transects 23, 24, and 25) were begun in a large lawn west of the access road and the swimming pools and tennis courts (Figure 5.30). The transects extend south through heavy brush (Figure 5.31). Additional transects were planned east of Transect 25 and the access road but probing revealed that concrete and gravel lay directly below topsoil and therefore this section was considered disturbed and not subjected to testing. A 50-ft (15-m) interval was maintained between the transects and between the shovel tests except for the shovel tests placed on the graded lawn area to the tree line where the interval between shovel tests along the transects

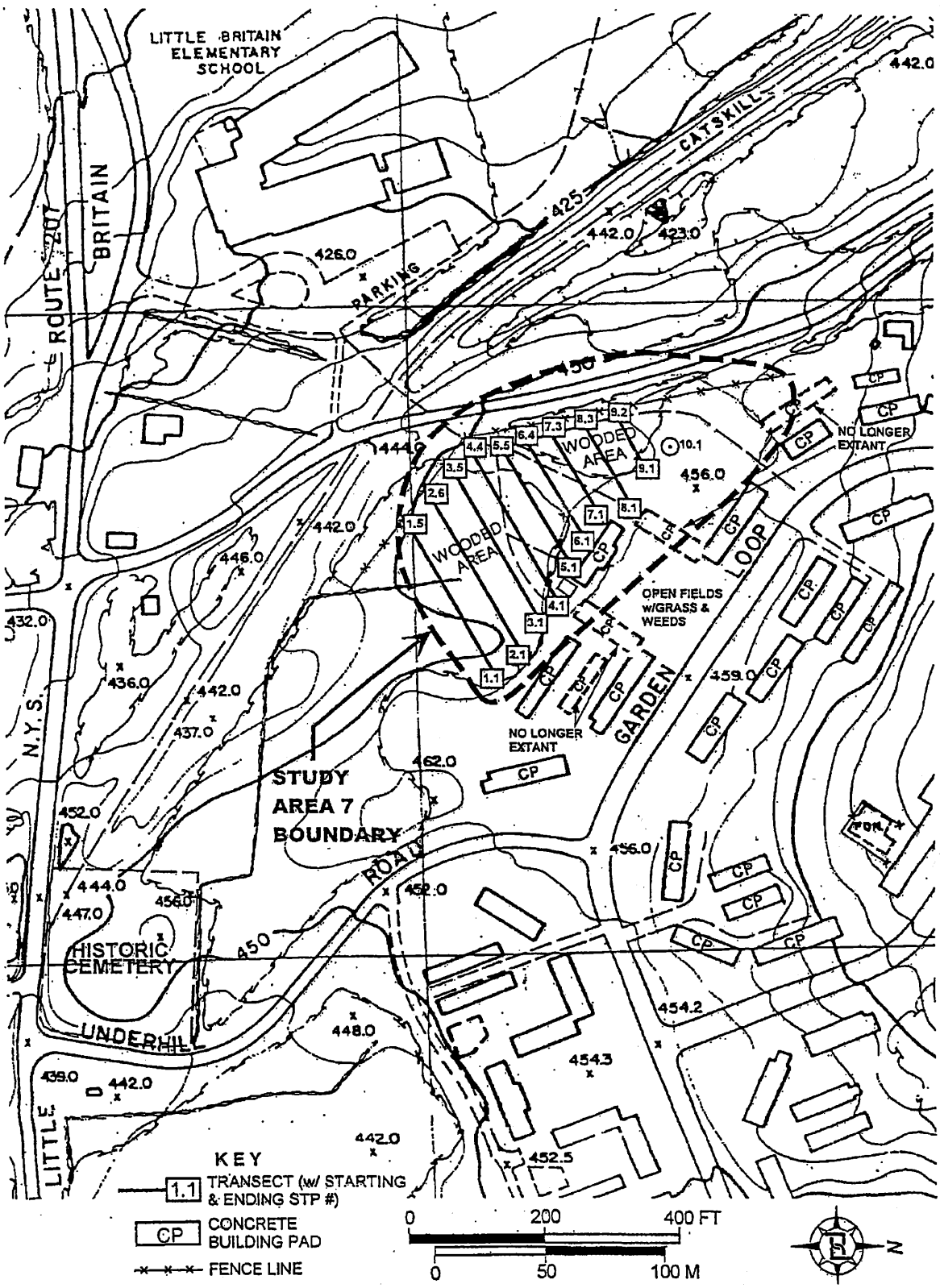


Figure 5.25. Study Area 7: location of Transects 1 through 10 and areas of disturbance *(adapted from Sells 1973).*

Figure 5.26. Study Area 7: concrete pad, remnant of military housing development, with Transects 5, 6 and 7 starting behind it, facing west *(Burt 1999).*

Figure 5.27. Study Area 7: asphalt paved path west of STP 6.4, facing southwest *(Burt 1999).*

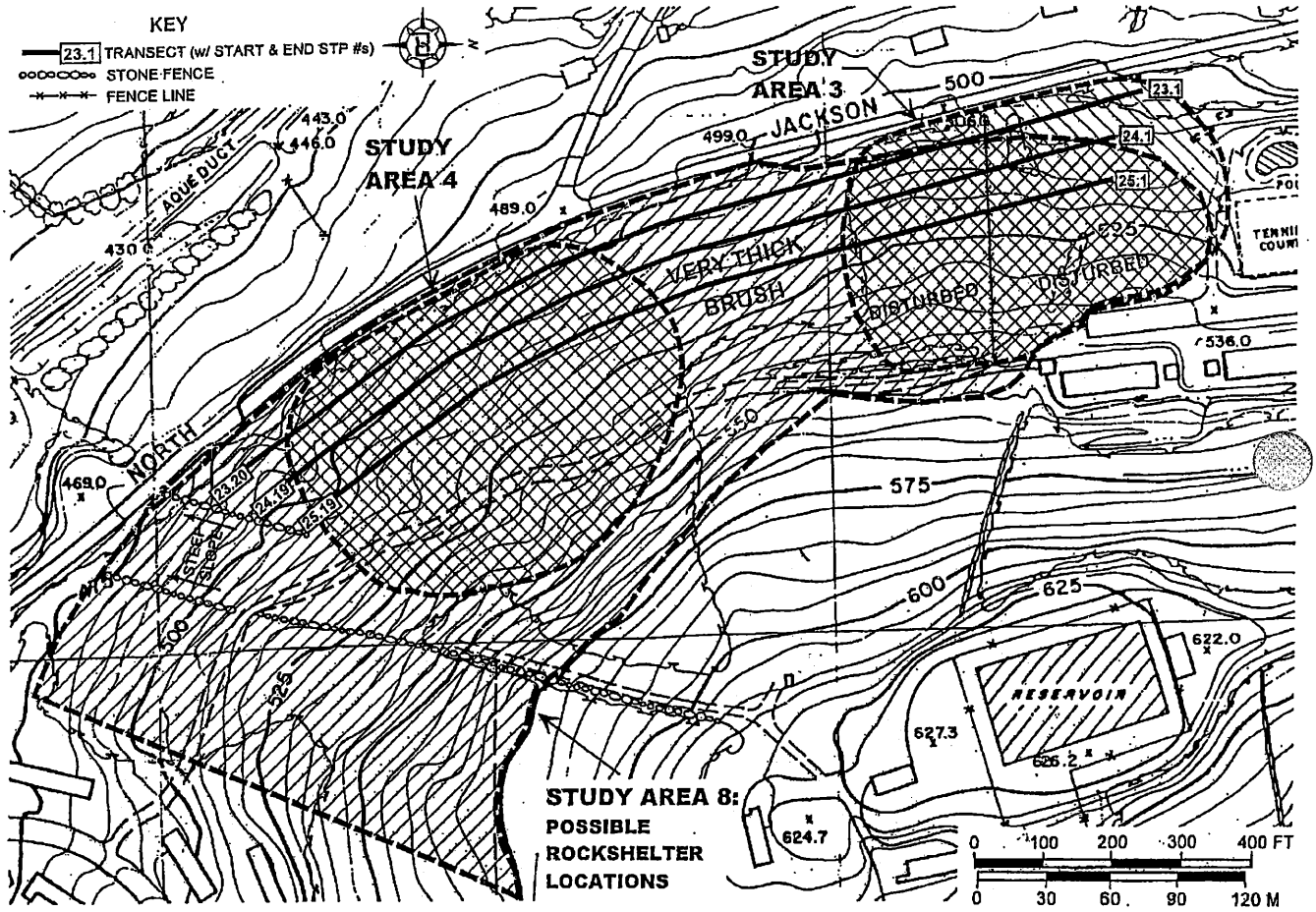


Figure 5.28. Study Areas 3, 4 and 8: locations of transects and areas of disturbance and slope *(adapted from Sells 1973).*

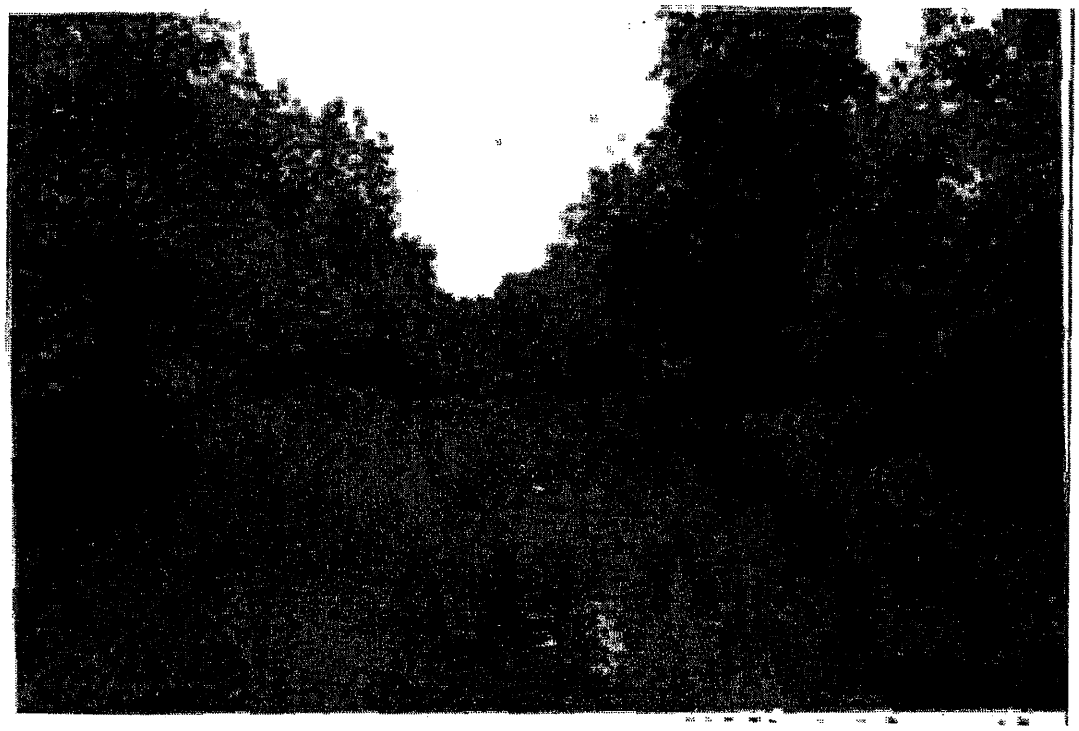


Figure 5.29. Study Area 8: gravel and grass road which bisects study area, taken 300 feet (91 m) south of end of Sixth Street, facing south *(Burt 1999).*

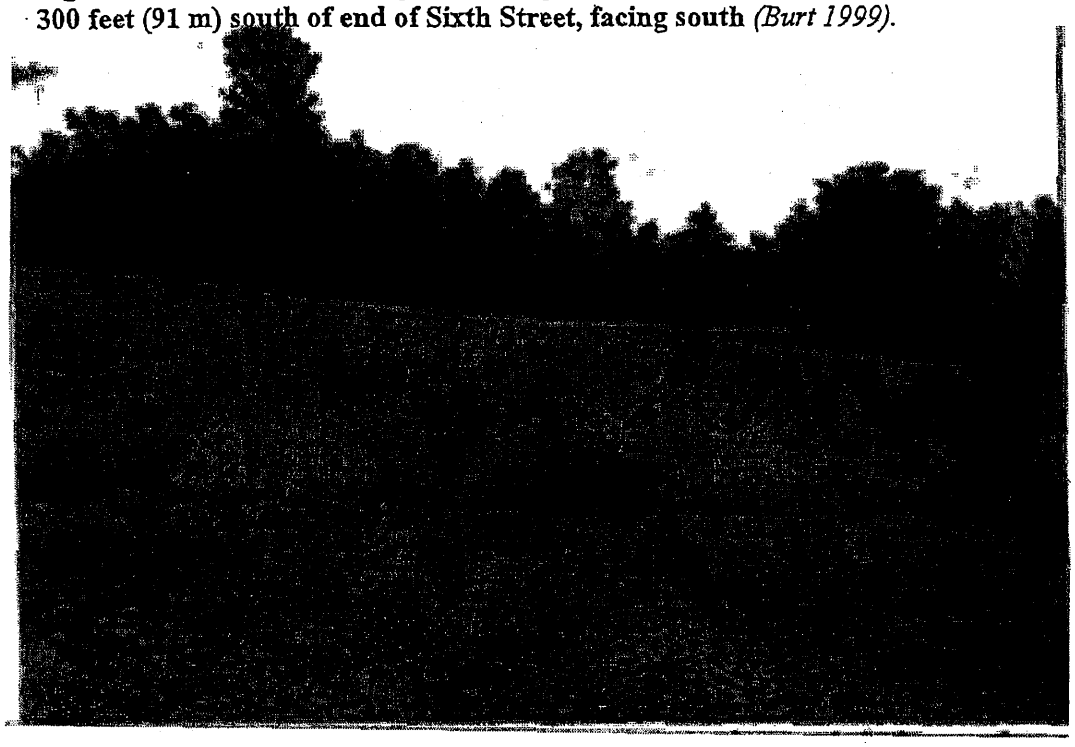


Figure 5.30. Study Area 8: lawn with STP 25.1 in background, facing southeast *(Burt 1999).*

Figure 5.31. Study Area 8: example of thick brush photographed from STP 25.8, facing east *(Burt 1999)*.

Figure 5.32. Study Area 8: apple tree on small terrace in vicinity of STP 25.7, facing northeast *(Burt 1999)*.

is 100 feet (30-m). STP 24.2 is located west of wild rose bushes and brush with a stone fence and stone piles in the area which may not indicate a disturbed terrain. The shovel test falls within the area originally designated Study Area 3 (see Figure 5.28). STP 25.7 is situated within a small apple orchard in the wooden area which lies within the area initially designated Study Area 4 (Figure 5.32). The eastern section of the study area is too steep for subsurface testing, but surface visibility in most sections was good—some 75 percent of the terrain could be viewed without ground cover obstruction. During the walkover a stone fence was noted, situated east of the access road, and continuing northeast to the top of Prospect Hill (Figure 5.33). No indications of foundations or any rock outcroppings were observed.

Soils encountered within the shovel tests of this area are characterized by two strata containing glacial till (Appendix A). Stratum 1 in 49 tests (84 percent) is predominantly silt ranging in color from dark grayish brown to brown and brownish yellow to light yellowish brown. Of the remaining nine shovel tests, six contain brown or mottled brown and yellowish brown sands and silts, while three contain dark brown or brown silty loam. The average depth of Stratum 1 is 7 inches (18 cm). Stratum 2 is characterized within two shovel tests as brown silt with rocks from 2 to 9 inches (5 to 23 cm) (in STP 25.9) and as light yellowish brown silty sand from 10 to13 inches (25 to 33 cm) (in STP 25.10). A total of 40 STPs (69 percent) were terminated due to rock or gravel impasses, while 11 tests (18 percent) were terminated due to root impasses and four tests (7 percent) were initially terminated due to disturbance. Forty-four shovel tests (76 percent) were considered disturbed based on disturbed soils including rock or gravel fill as well as the presence of modern materials such as concrete.

Recovered cultural material in Study Area 8 is limited to modern materials comprising concrete fragments found in STPs 24.1 and 25.1, and plaster in STP 23.1 (Appendix B).

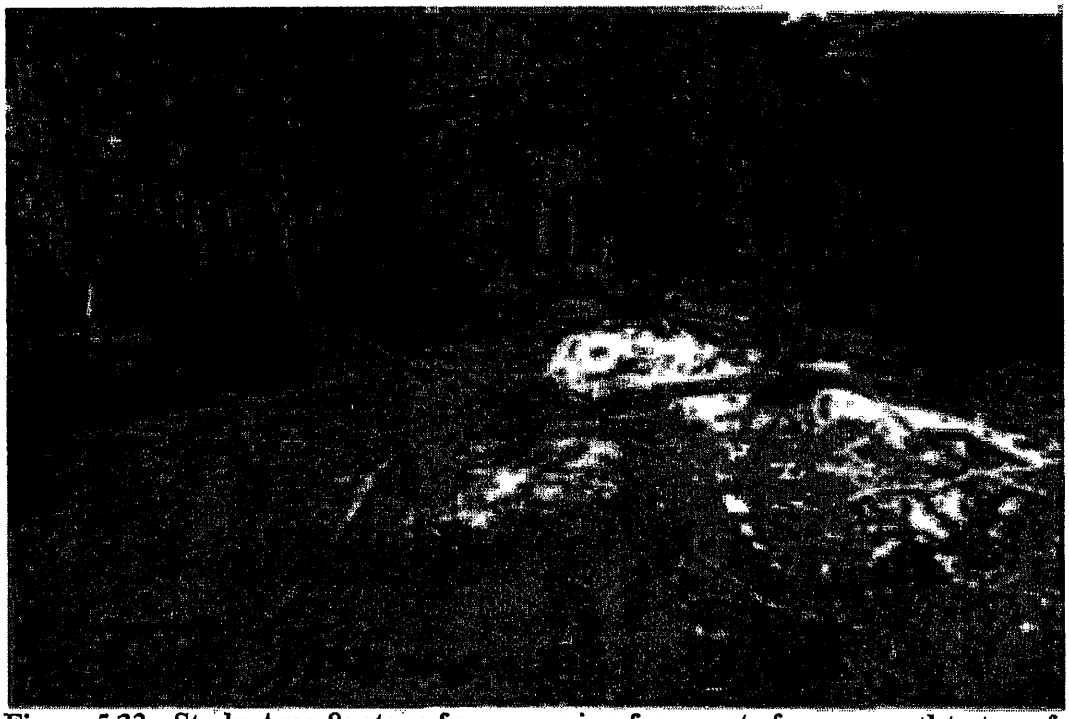


Figure 5.33. Study Area 8: stone fence running from east of access road to top of Prospect Hill, facing east *(Burt 1999).*

6.0 CONCLUSIONS AND RECOMMENDATIONS

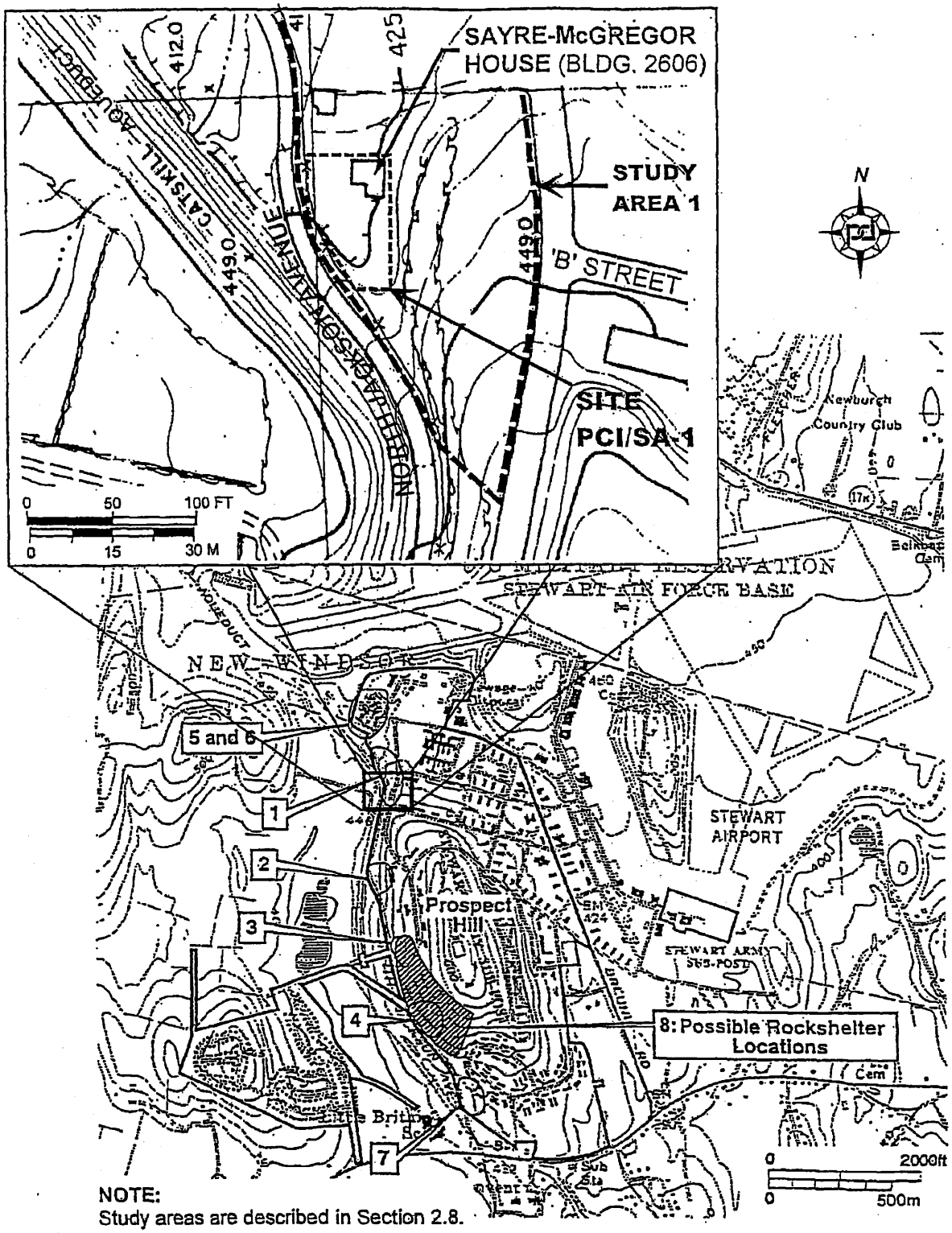
As part of the cultural resources investigations at the Stewart Army Subpost, PCI completed the field testing portion of the investigation as recommended in the Phase IA study, or background and sensitivity review, by John Milner Associates, Inc. (JMA) (Meyer et al. 1998). The authors of the Phase IA report identified eight archaeologically sensitive tracts within the Subpost—Study Area 1 represented the location of the historic, but non-National Register-eligible Sayre-McGregor house, Study Areas 2 through 7 were considered to represent potential historic house complexes and Study Area 8 was considered to represent possible prehistoric rock shelter locations (see Figure 2.1). PCI retained JMA's division, but combined Areas 3 and 4 with Area 8 to facilitate field testing. Testing consisted of intensive surface inspection and subsurface examination. A total of 190 shovel tests organized along 25 transects were excavated throughout the eight study areas. One unit was excavated to clarify stratigraphy and artifact deposition within Study Area 1. Field testing resulted in the identification of one historic period site (Figure 6.1), associated physically, but not necessarily temporally with the Sayre-McGregor house and minor to moderate concentrations of modern materials in Study Areas 2, 5, 7, and 8 (including 3 and 4).

6.1 ARCHAEOLOGICAL SITES WITHIN THE PROJECT AREA - STUDY AREA 1

- Site PCI/SA-1 comprises a 60-x-65-ft (18-x-20-m) area which includes an historic structure and two subsurface artifact concentrations located in Study Area 1 (see Figures 5.4, 5.12, 5.13 and 5.14). The historic structure or Sayre-McGregor house represents a field stone dwelling built in 1847 for William Sayre, a Hudson riverboat captain and later occupied by the McGregor family in the 1880s until the military acquired the land in relation to Stewart Airport in 1941. Feature 1 constitutes one of the two subsurface artifact concentrations, with the recovered artifacts dating to the nineteenth century. The feature, situated west of the house, can be identified within Unit 1, as deriving from Levels 2 and 3 of Quadrant A and from shovel tests 11.6 and 11.6+0'N 5'E. The second concentration of historic materials also dates primarily to the nineteenth century, but has been identified as fill. The second concentration's location within Unit 1 is confined to Stratum 1/Level 1 of Quadrant A and Stratum 1/Levels 1 and 2 of Quadrant B and among shovel tests 11.5, 11.5+5'S 0'W, 11.6, 11.6+5'S 0'W, 11.6+0'N 5'E, 11.6+5'N 5'E, 11.6+5'W 0'N, 11.6+10'N 0'E, 11.7, 11.7+5'W 0'N and 11.7+0'N 5E' (see Appendix B).

6.2 RECOMMENDATIONS FOR THE SITES WITHIN THE PROJECT AREA

- Site PCI/SA-1 encompasses a fieldstone house built in 1847, but later twentieth century additions as well as lack of uniqueness in vernacular architecture makes the house ineligible to the National Register for Historic Places (Meyer et al. 1998:71; see also Section 2.8, this report). The archaeological material recovered from the shovel tests and Unit 1 indicate a nineteenth to twentieth century provenience, with the materials representing a fill episode which may be associated with the historic occupation of the house. The fill materials are located within the lowest point of the yard and may reflect



NOTE:
Study areas are described in Section 2.8.

Figure 6.1. Location of study areas and archaeological site PCI/SA-1 within the Stewart Army Subpost Project Area *(USACE 1999).*

later additions to the structure or nearby construction activities of the Catskill Aqueduct, located about one hundred feet west of the site. Begun in 1907 and completed in 1917 the aqueduct still carries water from Ashokan Reservoir, west of Kingston, to New York City. North Jackson Avenue, bordering Study Area 1 on the west, was redirected in relation to the construction of the aqueduct and may be a source of fill (*cf.* Meyer et al. 1998:59). Other potential causes for disturbance or sources of feature material include the construction of the twentieth century garage north of STP 11.7, the apparent removal/ demolition of a saw mill indicated on historic period maps (Meyer et al. 1998:59, Table 3), and the channelization of Beaver Dam Creek which runs west and north of the site. All of these construction activities could have led to the deposition or removal of soils at the site area. The fill and feature material lack a clear associative context—the fill material could be derived from the feature material or the materials could reflect separate depositional events. The fill and feature material also lack a clear associative context with the historic Sayre-McGregor house occupation. Most of the artifacts date after 1850 and possibly into the twentieth century. The small size of the artifacts and lack of useful analytical traits and context of the recovered materials does not provide sufficient argument for considering them as eligible to the National Register, even with an association to the Sayre-McGregor house. Because the research potential of any remaining cultural materials is low, PCI does not recommend any additional archaeological investigations at this site.

6.3 Recommendations for Study Areas 2 through 8

- The remaining Study Areas 2 through 8 all showed evidence of considerable disturbance based on such factors as existing structures, roads, fill, minimal soil depth, and minimal soil development. Recovered materials were all modern in origin—aluminum beer cans, a glass marble, and concrete fragments (see Appendix B). No further archaeological investigations are recommended for any of these study areas.

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APPENDIX A

SHOVEL TEST LOG

Shovel Test Log

Area	Transect/ STP	Stratum	Depth (inches)	Munsell	Soil Color	Soil Description	Comments
1	11.1	1	0-15	10YR 5/2	GR BR	SI LO	NCM
1	11.2	1	0-8	10YR 6/4	LT YL BR	SI LO	brown container glass, discarded
1	11.2	2	8-12	10YR 6/4	LT YL BR	SI LO	clear flat glass, discarded
1	11.2 +5'N 0'E	1	0-16	10YR 6/4	LT YL BR	SI LO	NCM
1	11.2+5'S 0'W	1	0-14	10YR 4/3	BR	SI w/ rocks, gravel	NCM; root impasse-14"; disturbed
1	11.2+5'W 0'N	1	0-12	10YR 4/3	BR	SI w/ rocks, gravel	NCM; root impasse-12"; disturbed
1	11.2+0'N 5'E	1	0-13	10YR 6/4	LT YL BR	SI w/ rocks, gravel	NCM
1	11.3	1	0-11	10YR 5/2	GR BR	SI LO	NCM; root impasse-11"; disturbed
1	11.4	1	0-13	10YR 4/3	BR	SI LO	NCM; root impasse-13"; disturbed
1	11.5	1	0-15	10YR 6/4	LT YL BR	SI LO	Site PCI/SA-1: historic ceramic, glass, metal, discarded
1	11.5+0'N 5'E	1	0-2	10YR 6/4	LT YL BR	SI LO	NCM; root impasse-2"
1	11.5+5'S 0'W	1	0-13	10YR 6/4	LT YL BR	SI LO	Site PCI/SA-1: plaster - discarded
1	11.5+5'N 0'E	1	0-15	10YR 4/3	BR	SI w/ rocks, gravel	NCM; disturbed
1	11.5+0'N 5'W	1	0-15	10YR 5/3	BR	SI w/gravel	NCM; disturbed
1	11.6	1	0-19	10YR 5/3	BR	SI w/ rocks, gravel	Site PCI/SA-1: mammal bones; salt-glazed ceramic; other ceramics discarded; disturbed
1	11.6+5'N 0'E	1	0-16	10YR 6/4	LT BR YL	SI	Site PCI/SA-1: ceramics, glass, metal - discarded
1	11.6+10'N 0'E	1	0-10	10YR 4/3	BR	SI LO	Site PCI/SA-1: ceramics, faunal
1	11.6+0'N 5'W	1	0-13	10YR 4/3	BR	SI w/ rocks, gravel	Site PCI/SA-1: ceramics, glass; buttons - discarded
1	11.6+0'N 5'W	2	13-15	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-15"
1	11.6+0'N 5'E	1	0-16	10YR 4/3	BR	SI LO.	Site PCI/SA-1: ceramics, faunal; modern metal, ceramic discarded
1	11.6+ 5'S 0'W	1	0-16	10YR 4/3	BR	SI LO	Site PCI/SA-1: whiteware, stoneware, redware; other ceramic discarded; rock impasse-16"
1	11.6+5'N 5'E	1	0-20	10YR 4/3	BR	SI LO	Site PCI/SA-1: faunal, ceramic
1	11.6+10N' 5'E	1	0-15	10YR 4/3	BR	SI LO	Site PCI/SA-1: whiteware-discarded
1	11.7	1	0-12	10YR 6/4	LT YL BR	SI LO	Site PCI/SA-1: red brick-discarded
1	11.7+0'N 5'E	1	0-12	10YR 4/3	BR	SI LO w/gravel	Site PCI/SA-1: ironstone rim sherd; brick, glass-discarded
1	11.7+0'N 5'E	2	12-15	10YR 6/4	LT YL BR	SA SI w/gravel	Site PCI/SA-1; NCM; disturbed
1	11.7+5'S 0'W	1	0-12	10YR 6/6	BR YL	SI LO	NCM
1	11.7+5'N 0'E	1	0-10	10YR 4/3	BR	SI w/ rocks, gravel	Site PCI/SA-1: disturbed; red brick, glass-discarded
1	11.7+5'N 0'E	2	10-14	10YR 6/3	PALE BR	SI	NCM
1	11.7+0'N 5'W	1	0-13	10YR 6/4	LT YL BR	SI	Site PCI/SA-1: stoneware, poss, Creamware; red brick-discarded
1	12.1	1	0-6	10YR 4/2	DK GR BR	SI w/roots	NCM
1	12.2	1	0-10	10YR 5/3	BR	SI w/roots and rocks	NCM; rock impasse-10"; disturbed
1	12.3	1	0-8	10YR 5/3	BR	SI	NCM; rock impasse-8"
1	12.4	1	0-15	10YR 5/3	BR	SI w/ rocks, gravel	NCM; disturbed
1	12.5	1	0-12	10YR 5/3	BR	SI w/ rocks, gravel	NCM; disturbed
1	12.6	1	0-14	10YR 5/3	BR	SI w/ rocks, gravel	NCM
1	12.7	1	0-6	10YR 4/3	BR	SI LO	modern sewer tile, discarded
1	12.7	2	6-9	10YR 6/3	PALE BR	SI	NCM
1	13.1	1	0-8	10YR 4/3	BR	SI	NCM

Shovel Test Log

Area	Transect/ STP	Stratum	Depth (inches)	Munsell	Soil Color	Soil Description	Comments
1	13.1	2	8-12	10YR 6/4	LT YL BR	SI	NCM
1	13.2	1	0-7	10YR 4/3	BR	SI	NCM; rock impasse-7"
1	13.3	1	0-1	10YR 4/3	BR	SI w/gravel	NCM; disturbed
1	13.3	2	1-6	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	13.4	1	0-2	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	14.1	1	0-2	10YR 4/3	BR	SA SI	NCM; disturbed
1	14.1	2	2-9	10YR 6/4	LT YL BR	SI	NCM; disturbed
1	14.2	1	0-4	10YR 4/3	BR	SA SI	NCM
1	14.2	2	4-8	10YR 6/4	LT YL BR	SI w/roots	NCM; root impasse-8"
1	15.1	1	0-2	10YR 4/3	BR	SI	NCM; disturbed
1	15.2	1	0-5	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	15.3	1	0-6	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	15.4	1	0-2	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	15.5	1	0-7	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	15.6	1	0-2	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	16.1	1	0-10	10YR 4/3	BR	SI w/roots	NCM; root impasse-10"
1	16.2	1	0-2	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	16.3	1	0-5	10YR 4/3	BR	SI LO	NCM; disturbed
1	16.3	2	5-10	10YR 5/6	YL BR	CL w/rocks	NCM
1	16.4	1	0-4	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	16.5	1	0-10	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed
1	17.1	1	0-7	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-7" BS
1	17.2	1	0-7	10YR 6/4	LT YL BR	SI w/gravel	NCM; disturbed; root impasse-7" BS
1	17.3	1	0-5	10YR 6/4	LT YL BR	SI w/rocks	NCM; disturbed
1	17.4	1	0-8	10YR 5/3	BR	CL	NCM; root impasse-7" BS
1	17.5	1	0-2	10YR 4/3	BR	SI w/gravel	NCM; disturbed
1	17.5	2	2-10	10YR 6/4	LT YL BR	SI w/rocks, gravel & roots	NCM; root impasse-10" BS; disturbed
1	18.1	1	0-5	10YR 4/3	BR	CL	NCM; root impasse-5" BS
1	18.2	1	0-5	10YR 6/4	LT YL BR	SI w/ rocks, gravel	NCM; disturbed
2	20.1	1	0-13	10YR 4/3	BR	SI SA	NCM; rock impasse-13" BS
2	20.2	1	0-7	10YR 4/3	BR	SI	NCM; disturbed
2	20.3	1	0-11	10YR 4/3	BR	SI	NCM; root impasse-11" BS
2	20.4	1	0-9	10YR 6/4	LT YL BR	SI w/rocks	disturbed; modern metal/mortar-discarded
2	20.5	1	0-8	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-8" BS; disturbed
2	20.6	1	0-8	10YR 5/2	GR BR	SI	NCM
2	20.6	2	8-13	10YR 6/3	PALE BR	SI CL	NCM
2	20.7	1	0-3	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-3" BS; disturbed
2	20.8	1	0-14	10YR 5/6	YL BR	SI	NCM
2	20.9	1	0-13	10YR 6/3	PALE BR	SI	NCM
2	20.10	1	0-9	10YR 4/3	BR	SI	NCM; rock impasse-9" BS
2	20.11	1	0-9	10YR 4/3	BR	SI	NCM; rock impasse-9" BS
2	20.12	1	0-5	10YR 4/3	BR	SI SA w/rocks	NCM; rock impasse-5" BS
2	20.13	1	0-6	10YR 4/3	BR	SI SA w/rocks	NCM; rock impasse-6" BS
2	20.14	1	0-3	10YR 4/3	BR	SI SA w/rocks	NCM; rock impasse-3" BS
2	20.15	1	0-3	10YR 4/3	BR	SI SA w/rocks	NCM; rock impasse-3" BS
2	20.16	1	0-4	10YR 4/3	BR	SI SA w/rocks	NCM; rock impasse-4" BS
2	21.1	1	0-3	10YR 4/3	BR	SI SA w/rocks and roots	NCM
2	21.1	2	3-10	10YR 6/3	PALE BR	SA SI w/gravel	NCM; root impasse-10" BS
2	21.2	1	0-11	10YR 3/2	V DK GR BR	SI LO	NCM
2	21.2	2	4-14	10YR 5/3	BR	SA SI	modern glass/metal-discarded

Shovel Test Log

Area	Transect/ STP	Stratum	Depth (inches)	Munsell	Soil Color	Soil Description	Comments
2	21.3	1	0-1	10 YR 3/2	V DK GR BR	SI LO	modern foil-discarded
2	21.3	2	1-8	10YR 4/3	BR	SI SA	NCM; root and rock impasse-8" BS
2	21.4	1	0-14	10YR 6/4	LT YL BR	SA SI	NCM
2	21.5	1	0-3	10YR 4/3	BR	SI LO	NCM
2	21.5	2	3-6	10YR 6/3	PALE BR	SI w/rocks	NCM; rock impasse-6" BS
2	21.6	1	0-14	10YR 6/4	LT YL BR	SI	modern glass/metal-discarded
2	21.7	1	0-14	10YR 6/4	LT YL BR	SI w/rocks	NCM
2	21.8	1	0-6	10YR 6/6	BR YL	SI w/rocks	NCM; rock impasse-6" BS
2	22.1	1	0-4	10YR 4/3	BR	SI LO w/rocks	NCM; rock impasse-9" BS
2	22.2	1	0-2	10YR 3/1	V DK GR	SI LO	concrete-discarded
2	22.2	2	2-8	10YR 5/3	BR	SA SI w/rocks	concrete-discarded
2	22.3	1	0-2	10YR 3/1	V DK GR	SI LO w/gravel	drainage tile-discarded; rock impasse-12" BS
2	22.4	1	0-10	10YR 4/3	BR	SA SI	NCM
2	22.4	2	10-12	10YR 6/3	PALE BR	SI	NCM
2	22.5	1	0-1	10YR 3/1	V DK BR	SI LO w/rocks	NCM
2	22.5	2	1-6	10YR 5/3	BR	SA SI	NCM
2	22.5	3	6-10	10YR 6/3	PALE BR	SI	NCM
2	22.6	1	0-9	10YR 4/2	DK GR BR	SI LO w/roots	NCM; root impasse-9" BS
2	22.7	1	0-7	10YR 4/2	DK GR BR	SI LO w/roots	NCM; root impasse-7" BS
5	19.1	1	0-8	10YR 4/2, 10YR 6/4	DK GR BR, LT YL BR	SI w/rocks, gravel	asphalt-discarded
5	19.2	1	0-8	10YR 4/3	BR	SA SI	NCM; disturbed; rock impasse-8" BS
5	19.3	1	0-2	10YR 4/3	BR	SI w/rocks	NCM:disturbed; rock impasse-2" BS
5	19.4	1	0-14	10YR 4/2	DK GR BR	SI w/gravel	asphalt-discarded
5	19.5	1	0-9	10YR 4/3	BR	SI CL w/rocks	NCM; disturbed; rock impasse-9" BS
7	1.1	1	0-4	10YR 4/3	BR	SI w/ rocks, gravel	NCM; rock impasse-4" BS
7	1.2	1	0-3	10YR 4/2	DK GR BR	SI w/rocks	NCM; rock impasse-3" BS
7	1.3	1	0-10	10YR 5/3	BR	SI w/rocks, gravel	NCM; rock impasse-10" BS
7	1.4	1	0-9	10YR 4/2	DK GR BR	SI	NCM
7	1.4	2	9-12	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-12" BS
7	1.5	1	0-5	10YR 4/2	DK GR BR	SI	NCM
7	1.5	2	5-10	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-10" BS
7	2.1	1	0-11	10YR 5/2	GR BR	SI w/rocks	modern glass, bullet-discarded; rock impasse-11" BS
7	2.2	1	0-6	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-11" BS
7	2.3	1	0-12	10YR 6/3	PALE BR	SI w/rocks	NCM; rock impasse-12" BS
7	2.4	1	0-8	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-8" BS
7	2.5	1	0-6	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-6" BS
7	2.6	1	0-6	10YR 4/2	DK GR BR	SI w/rocks	NCM
7	2.6	2	6-11	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-11" BS
7	3.1	1	0-3	10YR 4/3	BR	SI LO	NCM; rock impasse-3" BS
7	3.2	1	0-10	10YR 4/3	BR	SI LO	NCM
7	3.3	1	0-16	10YR 5/6	YL BR	SI LO	modern glass-discarded
7	3.4	1	0-13	10YR 5/6	YL BR	SI LO w/rocks	NCM
7	3.5	1	0-6	10YR 5/2	GR BR	SI LO w/gravel	NCM; gravel impasse-6" BS
7	4.1	1	0-9	10YR 4/2	DK GR BR	SI w/rocks	NCM; rock impasse-9" BS
7	4.2	1	0-6	10YR 5/3	BR	SI w/ rocks, gravel	NCM; rock and gravel impasse-6" BS
7	4.3	1	0-6	10YR 4/3	BR	SI	NCM
7	4.3	2	6-10	10YR 6/4	LT YL BR	SI w/ rocks, gravel	NCM; rock impasse-10" BS
7	4.4	1	0-4	10YR 4/3	BR	SI	NCM
7	4.4	2	4-11	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-11" BS

Shovel Test Log

Area	Transect/ STP	Stratum	Depth (inches)	Munsell	Soil Color	Soil Description	Comments
7	5.1	1	0-6	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-6" BS
7	5.2	1	0-8	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-8" BS
7	5.3	1	0-4	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-4" BS
7	5.4	1	0-9	10YR 6/4	LT YL BR	SI w/roots	NCM; root impasse-9" BS
7	5.5	1	0-5	10YR 6/4	LT YL BR	SI w/roots	NCM; root impasse-5" BS
7	6.1	1	0-3	10YR 4/3	BR	SI w/ rocks, gravel	NCM; rock and gravel impasse-3" BS
7	6.2	1	0-4	10YR 5/3	BR	SI W/GRAVEL	NCM; gravel impasse-4" BS
7	6.3	1	0-7	10YR 5/2	GR BR	SI w/rocks	NCM; disturbed; rock impasse-7" BS
7	6.4	1	0-8	10YR 5/2	GR BR	SI w/ rocks, gravel	NCM; rock impasse-8" BS
7	7.1	1	0-3	10Y4 6/4	LT YL BR	SI w/hard-packed gravel	NCM; disturbed; gravel impasse-3" BS
7	7.2	1	0-1	10YR 4/2	DK GR BR	SI w/rocks	NCM
7	7.2	2	1-7	10Y4 6/4	LT YL BR	SI w/rocks	NCM; disturbed; rock impasse-7" BS
7	8.1	1	0-2	10YR 4/3	BR	SI w/rocks	NCM; disturbed; rock impasse-2" BS
7	8.2	1	0-1	10Y4 6/4	LT YL BR	SI w/roots and rocks	NCM; rock and root impasse-1" BS
7	8.3	1	0-3	10YR 5/3	BR	SA SI w/rocks	asphalt and fill-disturbed
7	9.1	1	0-9	10YR 5/3	BR	SI SA w/rocks	NCM; disturbed; rock impasse-9" BS
7	9.2	1	0-2	10YR 5/3	BR	SI SA w/rocks	NCM; disturbed; rock impasse-2" BS
7	10.1	1	0-3	10YR 5/3	BR	SI w/rocks	NCM; disturbed; rock impasse-3" BS
8	23.1	1	0-7	10YR 4/3	BR	SA SI w/gravel	plaster and fill-disturbed
8	23.2	1	0-2	10YR 4/3	BR	SA SI w/gravel	NCM;disturbed; rock impasse-2" BS
8	23.3	1	0-5	10YR 4/3	BR	SA SI w/gravel	NCM; disturbed; gravel impasse-5" BS
8	23.4	1	0-11	10YR 4/3	BR	SI w/hard-packed rocks	NCM; gravel impasse-11" BS
8	23.4	1	0-14	10YR 5/2	GR BR	SI	NCM
8	23.5	1	0-8	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-8" BS
8	23.7	1	0-7	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-7" BS
8	23.8	1	0-2	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-2" BS
8	23.9	1	0-3	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-3" BS
8	23.10	1	0-2	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-2" BS
8	23.11	1	0-6	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-6" BS
8	23.12	1	0-6	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-6" BS
8	23.13	1	0-13	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-13" BS
8	23.14	1	0-4	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-9" BS
8	23.15	1	0-7	10YR 5/2	GR BR	SI w/rocks	NCM; rock impasse-7" BS
8	23.16	1	0-4	10YR 4/3	BR	SI	NCM; root impasse-6" BS
8	23.17	1	0-9	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-9" BS
8	23.18	1	0-8	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-8" BS
8	23.19	1	0-3	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-3" BS
8	23.20	1	0-7	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-7" BS
8	24.1	1	0-2	10YR 4/3	BR	SI w/rocks	concrete pad-disturbed
8	24.2	1	0-8	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-15" BS
8	24.3	1	0-2	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-2" BS
8	24.4	1	0-13	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-13" BS
8	24.5	1	0-14	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-14" BS
8	24.6	1	0-13	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-13" BS
8	24.7	1	0-12	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-13" BS
8	24.8	1	0-2	10YR 6/4	LT YL BR	SI w/rocks	NCM; root impasse-2" BS
8	24.9	1	0-1	10YR 6/4	LT YL BR	SI w/rocks	NCM; root impasse-1" BS
8	24.10	1	0-3	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-3" BS
8	24.11	1	0-10	10YR 6/4	LT YL BR	SI w/rocks	NCM; root impasse-10" BS
8	24.12	1	0-7	10YR 6/4	LT YL BR	SI	NCM; root impasse-7" BS
8	24.13	1	0-7	10YR 6/4	LT YL BR	SI	NCM; root impasse-1" BS

Shovel Test Log

Area	Transect/ STP	Stratum	Depth (inches)	Munsell	Soil Color	Soil Description	Comments
8	24.14	1	0-2	10YR 6/4	LT YL BR	SI	NCM; root impasse-2" BS
8	24.15	1	0-9	10YR 6/4	LT YL BR	SI	NCM; root impasse-9" BS
8	24.16	1	0-4	10YR 6/4	LT YL BR	SI w/rocks	NCM; root impasse-9" BS
8	24.17	1	0-12	10YR 6/6	BR YL	SI w/rocks	NCM; rock impasse-12" BS
8	24.18	1	0-10	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-10" BS
8	24.19	1	0-12	10YR 6/4	LT YL BR	SI w/rocks	NCM; rock impasse-12" BS
8	25.1	1	0-6	10YR 4/3	BR	SI w/rocks	concrete fragments, discarded
8	25.2	1	0-8	10YR 4/3, 10YR 5/6	BR, YL BR	SI SA w/rocks	NCM; disturbed
8	25.3	1	0-10	10YR 4/2	DK GR BR	SI w/rocks	NCM; rock impasse-10" BS
8	25.4	1	0-11	10YR 4/3	BR	SI w/roots and rocks	NCM; root impasse-11" BS
8	25.5	1	0-8	10YR 4/3	BR	SI w/roots and rocks	NCM; root impasse-8" BS
8	25.6	1	0-6	10YR 4/3	BR	SI LO w/rocks	NCM; rock impasse-6" BS
8	25.7	1	0-7	10YR 4/3	BR	SI w/roots and rocks	NCM; rock impasse-7" BS
8	25.8	1	0-10	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-10" BS
8	25.9	1	0-2	10YR 3/3	DK BR	SI LO	NCM
8	25.9	2	2-9	10YR 5/3	BR	SI w/rocks	NCM; rock impasse-9" BS
8	25.10	1	0-13	10YR 4/3	BR	SI	NCM
8	25.10	2	13-17	10YR 6/4	LT YL BR	SI SA	NCM
8	25.11	1	0-8	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-8" BS
8	25.12	1	0-10	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-10" BS
8	25.13	1	0-5	10YR 5/3	BR	SI w/rocks	NCM; rock impasse-5" BS
8	25.14	1	0-7	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-7" BS
8	25.15	1	0-10	10YR 4/3	BR	SI	NCM; root impasse-10" BS
8	25.16	1	0-8	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-8" BS
8	25.17	1	0-6	10YR 4/2	DK GR BR	SI w/rocks	NCM; rock impasse-6" BS
8	25.18	1	0-5	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-5" BS
8	25.19	1	0-6	10YR 4/3	BR	SI w/rocks	NCM; rock impasse-6" BS

Key to Shovel Test Abbreviations

Soil Colors:

BR	Brown
DK	Dark
GR	Gray
LT	Light
YL	Yellow
V	Very

Soil Descriptions:

LO	Loam
SI	Silt
CL	Clay
SA	Sand

Comments:

BS	Below surface
NCM	No cultural material

APPENDIX B

ARTIFACT INVENTORY

Artifact Inventory

Area	Transect/ STP #	Unit / Quadrant	Stratum /Level	Depth (inches)	Quantity	Site Designation	Artifacts
1	11.2	n/a	1	0-8	1	PCI/SA-1	Glass: brown container fragment with raised decoration; modern-discarded in laboratory
1	11.2	n/a	2	8-12	1	PCI/SA-1	Glass: clear, flat plate (safety) glass fragment < 1" in size; last quarter of the 20th century; discarded in laboratory
1	11.2	n/a	2	8-12	1	PCI/SA-1	Glass: blue-green fragment or chip; modern; discarded in laboratory
1	11.5	n/a	1	0-15	1	PCI/SA-1	Ceramic: body sherd of whiteware < 1" in size; discarded in the field
1	11.5	n/a	1	0-15	4	PCI/SA-1	Ceramic: red brick fragments < 1" in size; discarded in the field
1	11.5	n/a	1	0-15	2	PCI/SA-1	Metal: very corroded nail fragments, unidentifiable; discarded in the field
1	1.5+5'S 0'W	n/a	1	0-13	20	PCI/SA-1	Miscellaneous: plaster fragments < 1" in size; discarded in the field
1	1.5+5'S 0'W	n/a	1	0-13	1	PCI/SA-1	Miscellaneous: coal slag; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Faunal: mammal long bone fragment
1	11.6	n/a	1	0-19	2	PCI/SA-1	Faunal: small mammal bone fragments
1	11.6	n/a	1	0-19	3	PCI/SA-1	Faunal: hard shell clam fragments; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Ceramic: sherd of salt-glazed stoneware with cobalt blue decoration and reddish brown interior; 19th century storage vessel
1	11.6	n/a	1	0-19	2	PCI/SA-1	Ceramic: unassociated body sherds of lead glazed red earthenware, black exterior and interior < 1" in size; 19th century; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Ceramic: body sherd of lead glazed red earthenware < 1" in size; discarded in the field
1	11.6	n/a	1	0-19	5	PCI/SA-1	Ceramic: unassociated body sherds of whiteware < 1" in size; 19th to 20th century; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Ceramic: body sherd of whiteware > 1" < 2" in size; 19th to 20th century; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Ceramic: rim sherd of blue shell-edged whiteware, heavily spalled; 19th century; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Ceramic: body sherd of porcelain bluish gray tint to body, last quarter of 19th century; discarded in the field
1	11.6	n/a	1	0-19	13	PCI/SA-1	Ceramic: red brick fragments, 1" in size; discarded in the field
1	11.6	n/a	1	0-19	2	PCI/SA-1	Ceramic: red brick fragments > 1" < 2" in size; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Ceramic: partial red brick, thickns-2", width-3.5", incomplete length -4"; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Glass: fragment of blue-green tinted window glass; historic; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Metal: machine-cut nail fragment; 19th century; discarded in the field
1	11.6	n/a	1	0-19	1	PCI/SA-1	Miscellaneous: piece of coal; discarded in the field

Artifact Inventory

Area	Transect/ STP #	Unit / Quadrant	Stratum /Level	Depth (inches)	Quantity	Site Designation	Artifacts
1	11.6+0N 5W	n/a	1	0-13	3	PCI/SA-1	Ceramic: whiteware body sherds; 19th to 20th century
1	11.6+0N 5W	n/a	1	0-13	1	PCI/SA-1	Ceramic: sherd of brown banded whiteware (annularware); 19th century
1	11.6+0N 5W	n/a	1	0-13	1	PCI/SA-1	Glass: white button with four holes; modern; discarded in laboratory
1	11.6+0N 5W	n/a	1	0-13	1	PCI/SA-1	Glass: flat fragment of greenish tinted glass (window glass); historic
1	11.6+0N 5W	n/a	1	0-13	1	PCI/SA-1	Glass: flat and thick fragment of green container glass; historic
1	11.6+5S 0W	n/a	1	0-16	2	PCI/SA-1	Ceramic: body sherds of whiteware < 1/2"; 19th to twentieh century
1	11.6+5S 0W	n/a	1	0-16	2	PCI/SA-1	Ceramic: sherds of blue transfer-printed whiteware < 1/2"; 19th century
1	11.6+5S 0W	n/a	1	0-16	1	PCI/SA-1	Ceramic: sherd of black transfer-printed whiteware , 1/2"; 19th century
1	11.6+5S 0W	n/a	1	0-16	1	PCI/SA-1	Ceramic: sherd of salt-glazed stoneware with dark brown interior; 19th century
1	11.6+5S 0W	n/a	1	0-16	1	PCI/SA-1	Ceramic: sherd of lead glaze redware; 19th century
1	11.6+5S 0W	n/a	1	0-16	2	PCI/SA-1	Ceramic: body sherds of whiteware, 1/2" in size; 19th to 20th century; discarded in the field
1	11.6+5S 0W	n/a	1	0-16	1	PCI/SA-1	Ceramic: red brick fragment < 1" in size; discarded in the field
1	11.6+5S 0W	n/a	1	0-16	1	PCI/SA-1	Glass: modern clear window glass; discarded in the field
1	11.6+0N 5E	n/a	1	0-16	5	PCI/SA-1	Faunal: associated fragments of mammal bones with cuts marks
1	11.6+0N 5E	n/a	1	0-16	2	PCI/SA-1	Ceramic: crossmended plate rim sherds of blue transfer-printed whiteware, too small to determine diameter; 19th century
1	11.6+0N 5E	n/a	1	0-16	1	PCI/SA-1	Ceramic: blue transfer-printed whiteware sherd; 19th century
1	11.6+0N 5E	n/a	1	0-16	1	PCI/SA-1	Ceramic: glaze chip of whiteware
1	11.6+0N 5E	n/a	1	0-16	1	PCI/SA-1	Ceramic: basal rim sherd of possible creamware ?; eighteenth century
1	11.6+0N 5E	n/a	1	0-16	1	PCI/SA-1	Ceramic: small sherd of plain porcelain; mid to late 19th century
1	11.6+0N 5E	n/a	1	0-16	1	PCI/SA-1	Ceramic: rim sherd of salt-glazed stoneware storage vessel with dark brown interior; 19th century
1	11.6+0N 5E	n/a	1	0-16	2	PCI/SA-1	Ceramic: sherds of black clay pigeons shooting targets; modern
1	11.6+0N 5E	n/a	1	0-16	5	PCI/SA-1	Ceramic: fragments of red brick < 2" in size; discarded in the field
1	11.6+0N 5E	n/a	1	0-16	1	PCI/SA-1	Metal: corroded round nail with wire twisted around the head; 2 1/2"; modern
1	11.6+0N 5E	n/a	1	0-16	1	PCI/SA-1	Metal: gun shell casing, modern; discarded in the field
1	11.6+5N 0E	n/a	1	0-16	1	PCI/SA-1	Ceramic: body sherd of yellowware < 1/2" in size; mid 19th to 20th century; discarded in the field

Artifact Inventory

Area	Transect/ STP #	Unit / Quadrant	Stratum /Level	Depth (inches)	Quantity	Site Designation	Artifacts
1	11.6+5N 0E	n/a	1	0-16	4	PCI/SA-1	Ceramic: body sherds of whiteware < 1" in size; 19th to 20th century; discarded in the field
1	11.6+5N 0E	n/a	1	0-16	1	PCI/SA-1	Glass: flat green glass fragment < 1/2" in size; 19th to 20th century; discarded in the field
1	11.6+5N 0E	n/a	1	0-16	2	PCI/SA-1	Glass: flat clear glass fragments <1" in size; 19th to 20th century; discarded in the field
1	11.6+5N 0E	n/a	1	0-16	1	PCI/SA-1	Glass: fragment of curved clear glass < 1/2" in size; 19th to 20th century; discarded in the field
1	11.6+5N 0E	n/a	1	0-16	4	PCI/SA-1	Metal: corroded nail fragments, undatable; discarded in the field
1	11.6+5N 5E	n/a	1	0-20	2	PCI/SA-1	Faunal: fragments of crossmended hard shell clam
1	11.6+5N 5E	n/a	1	0-20	1	PCI/SA-1	Faunal: small fragment of possibly bone
1	11.6+5N 5E	n/a	1	0-20	2	PCI/SA-1	Ceramic: sherds of polychrome hand-painted pearlware < 1/2"; early 19th century
1	11.6+5N 5E	n/a	1	0-20	2	PCI/SA-1	Ceramic: sherds of whiteware; 19th century
1	11.6+5N 5E	n/a	1	0-20	1	PCI/SA-1	Ceramic: sherd of blue transfer-printed whiteware < 1/2"; mid to late 19th century
1	11.6+5N 5E	n/a	1	0-20	1	PCI/SA-1	Metal: corroded machine-cut nail, 1" in length; 19th to 20th century
1	11.6+10N	n/a	1	0-19	1	PCI/SA-1	Faunal: small mammal bone fragment
1	11.6+10N 0E	n/a	1	0-19	1	PCI/SA-1	Faunal: cow tooth
1	11.6+10N 0E	n/a	1	0-19	1	PCI/SA-1	Faunal: fragment of a very worn mammalian tooth, possibly pig or cow
1	11.6+10N 0E	n/a	1	0-19	3	PCI/SA-1	Ceramic: crossmended basal rim sherds from whiteware bowl; estimated basal diameter 3 1/2"; 19th century
1	11.6+10N 0E	n/a	1	0-19	1	PCI/SA-1	Ceramic: body sherd from whiteware plate; historic
1	11.6+10N 0E	n/a	1	0-19	6	PCI/SA-1	Ceramic: body sherds of whiteware < 1" in size; 19th to 20th century; discarded in the field
1	11.6+10N 0E	n/a	1	0-19	6	PCI/SA-1	Ceramic: body sherd of lead glazed red earthenware < 1/2"; discarded in the field
1	11.6+10N 0E	n/a	1	0-19	2	PCI/SA-1	Ceramic: red brick fragments < 1" in size; discarded in the field
1	11.6+10N 0E	n/a	1	0-19	1	PCI/SA-1	Ceramic: red brick fagments > 1" and < 2"; discarded in the field
1	11.6+10N 0E	n/a	1	0-19	1	PCI/SA-1	Stone: slate roofing material with remains of nail hole; historic
1	11.6+10N 5E	n/a	1	0-15	1	PCI/SA-1	Ceramic: whiteware body sherd < 1" in size; historic; discarded in the field
1	11.7	n/a	1	0-12	1	PCI/SA-1	Ceramic: red brick fragment < 1/2"; discarded in the field
1	11.7	n/a	1	0-12	2	PCI/SA-1	Ceramic: red brick fragments < 1/2 inc; discarded in the field
1	11.7+5N 0E	n/a	1	0-10	1	PCI/SA-1	Ceramic: red brick fragment, 1/2" in size; discarded in the field
1	11.7+5N 0E	n/a	1	0-10	1	PCI/SA-1	Glass: clear, flat glass fragment; discarded in the field

Artifact Inventory

Area	Transect/ STP #	Unit / Quadrant	Stratum /Level	Depth (inches)	Quantity	Site Designation	Artifacts
1	11.7+0N 5E	n/a	1	0-12	1	PCI/SA-1	Ceramic: rim sherd of ironstone from shallow bowl 7" in diameter; mid 19th to late 20th centuries
1	11.7+0N 5E	n/a	1	0-12	3	PCI/SA-1	Ceramic: red brick fragments < 1"; discarded in the field
1	11.7+0N 5E	n/a	1	0-12	2	PCI/SA-1	Glass: fragments of brown bottle glass; mid to late 20th century; discarded in laboratory
1	11.7+0N 5E	n/a	1	0-12	1	PCI/SA-1	Metal: brass bullet shell casing (38 caliber); last quarter of the 20th century
1	11.7+0N 5W	n/a	1	0-13	1	PCI/SA-1	Ceramic: rim sherd of salt-glazed stoneware plate 9" in diameter with cream colored interior and exterior; 19th century
1	11.7+0N 5W	n/a	1	0-13	2	PCI/SA-1	Ceramic: poss. creamware sherds < 1/2"
1	11.7+0N 5W	n/a	1	0-13	1	PCI/SA-1	Ceramic: fragment of very worn red brick; discarded in field
1	12.7	n/a	1	0-6	1		Ceramic: fragment of modern sewer tile; discarded in the field
				Subtotal:	170		
1	n/a	1A	S1/L1	0/3-10	1	PCI/SA-1	Glass: thin, green-tinted fragment of glass, lightly twisted
1	n/a	1A	S1/L1	0/3-10	2	PCI/SA-1	Metal: corroded machine-cut nail fragments; 19th century
1	n/a	1A Feature 1	S1/L2	10-20	4	PCI/SA-1	Faunal: fragments of hard shell clam
1	n/a	1A Feature 1	S1/L2	10-20	2	PCI/SA-1	Faunal: small fagments of mammal bone
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Ceramic: small sherd of gray bodied stoneware, dark brown interior; 19th century
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Ceramic: small sherd of lead glazed red earthenware, brown interior and exterior
1	n/a	1A Feature 1	S1/L2	10-20	27	PCI/SA-1	Ceramic: red brick fragments > 2" < 5" in size; discarded in the field
1	n/a	1A Feature 1	S1/L2	10-20	32	PCI/SA-1	Ceramic: red brick fragments, 2" in size; discarded in the field
1	n/a	1A Feature 1	S1/L2	10-20	4	PCI/SA-1	Ceramic: unassociated body sherd of white-ware > 1/4" to < 1" in size; 19th to 20th century
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Ceramic: small rim sherd of whiteware, heavily spalled
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Ceramic: small glaze chip of banded whiteware (annularware); 19th century
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Ceramic: small glaze chip of blue transfer-printed whiteware; 19th century
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Ceramic: rim sherd of blue shell-edged white-ware, no embossing along rim, 19th century
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Ceramic; rim sherd of green transfer-printed whiteware, design a diamond or basket weave < 1/2 in in size
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Ceramic: body sherd with attached embossed design, possibly part of handle, may be pearlware, < 1" in size; first half of 19th century
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Ceramic: body sherd of porcelain, 1" in size; 19th century
1	n/a	1A Feature 1	S1/L2	10-20	1	PCI/SA-1	Glass: small, green tinted window fragment

Artifact Inventory

Area	Transect/ STP #	Unit / Quadrant	Stratum /Level	Depth (inches)	Quantity	Site Designation	Artifacts
1	n/a	1A Feature 1	S1/L2	10-20	6	PCI/SA-1	Metal: very corroded nail fragments which appear to be machine-made; discarded in laboratory
1	n/a	1A Feature 1	S1/L2	10-20	3	PCI/SA-1	Miscellaneous: mortar fragments , 1" in size; discarded in the field
1	n/a	1A Feature 1	S1/L3	20-27	7	PCI/SA-1	Faunal: hard shell clam fragments < 1"
1	n/a	1A Feature 1	S1/L3	20-27	3	PCI/SA-1	Faunal: hard shell clam fragments > 1"
1	n/a	1A Feature 1	S1/L3	20-27	8	PCI/SA-1	Faunal: small fragments of miscellaneous mammal bone
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Faunal: dog incisor
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Faunal: tooth from pig
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Faunal: dentine from mammal tooth
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Ceramic: sherd of yellowware; mid 19th century to 20th century
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Ceramic: sherd of red earthenware with dark brown to black lead glaze; knob handle on top or cover < 1"; 19th century
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Ceramic: rim sherd of lead glazed red earthenware, storage vessel with top diameter of 4"; 19th century
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Ceramic: sherd of lead glazed red earthenware with dark brown lead glaze; 19th century
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Ceramic: body sherd of lead glazed red earthenware with yellow trail slip; 19th century
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Ceramic: body sherd of unglazed red earthenware, flower pot
1	n/a	1A Feature 1	S1/L3	20-27	5	PCI/SA-1	Ceramic: fragments of red brick ranging in size from 1" to 1 1/2"; discarded in laboratory
1	n/a	1A Feature 1	S1/L3	20-27	7	PCI/SA-1	Ceramic: body sherds of whiteware ranging in size from 1/2" to 1"; 19th century
1	n/a	1A Feature 1	S1/L3	20-27	3	PCI/SA-1	Ceramic: body sherds of unassociated blue transfer-printed whiteware; 19th century
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Ceramic: rim sherd of blue shell edged whiteware with very shallow embossing and not well-executed blue design on edge; mid to late 19th century
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Ceramic: body sherd of whiteware with brown exterior, possibly from annularware; 19th century
1	n/a	1A Feature 1	S1/L3	20-27	3	PCI/SA-1	Ceramic: small body sherds of plain pearlware < 1/2"; first half of the 19th century
1	n/a	1A Feature 1	S1/L3	20-27	2	PCI/SA-1	Ceramic: sherds of porcelain, one plain, one missing over glaze-possibly floral-design, 1/2 in size; first half of the ninteenth century
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Metal: corroded nail fragment
1	n/a	1A Feature 1	S1/L3	20-27	1	PCI/SA-1	Miscellaneous: fragment of plaster , 1/2"
1	n/a	1B	S1/L1	3-10	2	PCI/SA-1	Faunal: fragments of mamal bone; 1/2" and > 1-1/2" < 2"
1	n/a	1B	S1/L1	3-10	9	PCI/SA-1	Faunal: fragments of weathered hard shell clam
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Ceramic: body sherd of salt glazed stoneware from storage vessel, light gray to beige paste, and exterior and interior < 1"; 19th century
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Ceramic: rim sherd from yellowware plate, diameter of 10 1/2"; mid 19th to 20th century

Artifact Inventory

Area	Transect/ STP #	Unit / Quadrant	Stratum /Level	Depth (inches)	Quantity	Site Designation	Artifacts
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Ceramic: body sherd from yellowware plate, mid 19th to 20th century
1	n/a	1B	S1/L1	3-10	4	PCI/SA-1	Ceramic: body sherds of red earthenware with lead glaze on interior and exterior; 19th century
1	n/a	1B	S1/L1	3-10	2	PCI/SA-1	Ceramic: rim and body sherd of red earthenware with black exterior and interior, probably lead glazed, sherds may have been burned; rim diameter- 4"; 19th century
1	n/a	1B	S1/L1	3-10	7	PCI/SA-1	Ceramic: unassociated body sherds of whiteware ranging in size from 1/4" to 2"; 19th to 20th century
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Ceramic: rim sherd from whiteware cup or bowl, to small to identify
1	n/a	1B	S1/L1	3-10	2	PCI/SA-1	Ceramic: body sherds of black/brown banded whiteware (annular ware) which crossmend; 19th century
1	n/a	1B	S1/L1	3-10	5	PCI/SA-1	Ceramic: body sherds of unassociated blue transfer-printed whiteware ranging in size from 1/2" to 3/4"; 19th century
1	n/a	1B	S1/L1	3-10	3	PCI/SA-1	Ceramic: rim sherds of green shell-edged whiteware (two crossmend), no embossing on design; mid 19th to late 19th century
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Ceramic: rim sherd of blue shell-edged whiteware, heavily spalled, no embossing on design; mid 19th to late 20th century
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Ceramic: body sherd of ironstone with green floral ransfer-printed design on exterior; mid ninteenth to late 20th century
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Ceramic: body sherd of ironstone < 1" in size; mid to late 19th century
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Ceramic: rim sherd of ironstone from cup with 4" top diameter; mid to late ninteenth century
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Ceramic: body sherd of light creamware ?< 1" in size; late eighteenth century
1	n/a	1B	S1/L1	3-10	2	PCI/SA-1	Ceramic: body sherds of unassociated poly-chromed pearlware < 1/2" in size; first half 19th century
1	n/a	1B	S1/L1	3-10	2	PCI/SA-1	Ceramic: body sherds of unassociated blue transfer-printed pearlware ranging in size from 1/2" to 1 1/4"; early to mid 19th century
1	n/a	1B	S1/L1	3-10	2	PCI/SA-1	Ceramic: body sherds of porcelain, 1/2" in size; 19th century
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Glass: fragment of blue-green tinted window glass; historic
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Glass: clear, flat fragment; historic
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Glass: clear glass cylinder fragment, 3/16" thick and 1 3/8" long; historic
1	n/a	1B	S1/L1	3-10	1	PCI/SA-1	Stone: fragment of slate roofing material, remains of nail hole visible; historic
1	n/a	1B	S1/L2	10-20	1	PCI/SA-1	Faunal: fragment of very weathered oyster shell
1	n/a	1B	S1/L2	10-20	1	PCI/SA-1	Faunal: fragment of hard shell clam
1	n/a	1B	S1/L2	10-20	1	PCI/SA-1	Ceramic: glaze chip of trail slipped red earthenware; 19th century
1	n/a	1B	S1/L2	10-20	2	PCI/SA-1	Ceramic: unassociated basal fragments of pearlware < 1 1/4" in size; 19th century

Artifact Inventory

Area	Transect/ STP #	Unit / Quadrant	Stratum /Level	Depth (inches)	Quantity	Site Designation	Artifacts
1	n/a	1B	S1/L2	10-20	4	PCI/SA-1	Ceramic: unassociated body sherds of pearlware < 1" in size; 19th century
1	n/a	1B	S1/L2	10-20	11	PCI/SA-1	Ceramic: unassociated body sherds of whiteware < 1" in size; 19th century
1	n/a	1B	S1/L2	10-20	1	PCI/SA-1	Ceramic: glaze chip of blue hand-painted whiteware; 19th century
1	n/a	1B	S1/L2	10-20	1	PCI/SA-1	Ceramic: body sherd of blue transfer-printed white whiteware; 19th century
1	n/a	1B	S1/L2	10-20	5	PCI/SA-1	Ceramic: unassociated body sherds of yellowware < 1" in size; mid 19th to 20th century
1	n/a	1B	S1/L2	10-20	2	PCI/SA-1	Ceramic: unassociated body sherds of porcelain; 19th century
1	n/a	1B	S1/L2	10-20	1	PCI/SA-1	Ceramic: sherd with basal ring of porcelain ; 19th century
1	n/a	1B	S1/L2	10-20	1	PCI/SA-1	Ceramic: small porcelain body sherd with over glaze design in red/orange and purple; 19th century
1	n/a	1B	S1/L2	10-20	25	PCI/SA-1	Metal: copper alloy buttons, military type "bullet buttons", round but slightly flatten where loop shank and backing are attached; diameter 0.3", button weight: 0.175 oz.; 19th century
1	n/a	1B	S1/L2	10-20	3	PCI/SA-1	Metal: very corroded nail fragments; discarded in laboratory
1	n/a	1B	S1/L2	10-20	3	PCI/SA-1	Miscellaneous: fragments of coal and coal clinkers; discarded in laboratory
1	n/a	1B	S1/L2	10-20	4	PCI/SA-1	Miscellaneous: small fragments of mortar; discarded in laboratory
1	n/a	1B	S1/L2	10-20	1	PCI/SA-1	Ceramic: very small rim sherd of blue transfer-printed whiteware; 19th century
				Subtotal	262		
2	20.4	n/a	1	0-9	1	n/a	Metal: pull tab from aluminum can; last quarter of the 20th century; discarded in the field
2	20.4	n/a	1	0-9	1	n/a	Miscellaneous: small fragment of mortar; discarded in the field
2	21.2	n/a	surface	0	10	n/a	Glass: numerous fragments of broken beer bottles (brown and green); last quarter of the 20th century; discarded in the field
2	21.2	n/a	surface	0	3	n/a	Metal: aluminum beer cans; last quarter of the 20th century; discarded in the field
2	21.2	n/a	2	4-14	1	n/a	Glass: green and orange glass marble (cat's eye); mid to last quarter of the 20th century
2	21.3	n/a	1	0-1	1	n/a	Miscellaneous: fragment of aluminum foil; last quarter of the 20th century; discarded in the field
2	21.6	n/a	1	0-14	1	n/a	Glass: soft drink bottle "Coke", last quarter of the 20th century; discarded in the field
2	21.6	n/a	1	0-14	2	n/a	Metal: round nail fragments, last quarter of the 20th century; discarded in the field
2	22.2	n/a	1	0-2	1	n/a	Miscellaneous: fragment of concrete, last quarter of the 20th century; discarded in the field
2	22.2	n/a	2	2-8	1	n/a	Miscellaneous: fragment of concrete, last quarter of the 20th century; discarded in the field
2	22.3	n/a	1	0-2	3	n/a	Miscellaneous: modern drainage tile, last quarter of the 20th century; discarded in the field
2	22.5	n/a	surface	0	1	n/a	Miscellaneous: slab of concrete, last quarter of the 20th century; discarded in the field

Artifact Inventory

Area	Transect/ STP #	Unit / Quadrant	Stratum /Level	Depth (inches)	Quantity	Site Designation	Artifacts
				Subtotal	26		
5	19.1	n/a	1	0-8	4	n/a	Miscellaneous: asphalt chunks, last quarter of the 20th century; discarded in the field
5	19.4	n/a	1	0-4	1	n/a	Miscellaneous: asphalt chunks, last quarter of the 20th century; discarded in the field
				Subtotal	5	n/a	
7	2.1	n/a	1	0-11	1	n/a	Glass: clear, flat window glass fragment < 1" in size, last quarter of 20th century
7	2.1	n/a	1	0-11	1	n/a	Metal: .38 caliber pistor round, last quarter of the 20th century; discarded in the field
7	3.3	n/a	1	0-11	1	n/a	Glass: fragment of green bottle; last quarter of the 20th century; discarded in field
7	3.3	n/a	1	0-11	1	n/a	Miscellaneous: fragment of clear plastic; last quarter of 20th century; discarded in field
7	8.3	n/a	1	0-3	4	n/a	Miscellaneous: pieces of asphalt; last quarter of the 20th century; discarded in field
				Subtotal	8		
8	23.1	n/a	1	0-7	1	n/a	Miscellaneous: construction plaster; last quarter of the 20th century; discarded in the field
8	24.1	n/a	1	0-2	1	n/a	Miscellaneous: concrete pad; last quarter of the 20th century; noted in field
8	25.1	n/a	1	0-6	4	n/a	Miscellaneous: concrete fragments, last quarter of the 20th century; discarded in the field
				Subtotal	6		
				Total	477		
Key: n/a=not applicable		S = Stratum		L = Level			

APPENDIX C

LOG OF CONTACTS

Log of Contacts

Individual or Agency	Address	Phone #	Contact Personnel	Dates	Type of Contact
New York State Office of Parks, Recreation and Historic Preservation	Bureau of Historic Sites Archaeology Unit P.O. Box 219 Waterford, New York 12188	518-237-8643	Lois Feister, Senior Archaeologist	1/2000	telephone conversation
Stewart Army Sub-Post US Military Academy at West Point	Engineering Division Building 2416 Engineering Division Building 667A, West Point, NY 10996	914-567-3476	Mr. James Kennedy, Chief of Stewart Army Sub-Post Engineering Division, and Chief Installation Engineer, USMA	8/1999	telephoneconver sations and personal interviews
US Military Academy at West Point	Cultural Resources, Building 667A West Point, NY 10996	914-938-6388	Ms. Patrice Halin	8/1999	telephone conversations and correspondence
US Military Academy at West Point	Division of Natural Resources West Point, NY 10996	914-938-2314	Mr. Joseph Deschenes	8/1999	telephone conversation
US Army Corps of Engineers	New York District Office Environmental Analysis Branch 26 Federal Plaza New York, new York 10278	212-264-2198	Ms. Nancy Brighton, Archaeologist	8/1999	telephone conversations and correspondence

APPENDIX D

INTERIM REPORT

PCI BUFFALO • TUSCALOOSA • MEMPHIS • TAMPA

Buffalo Branch Office • 2390 Clinton Street • Buffalo, NY 14227 • (716) 821-1650 • Fax (716) 821-1607

September 14, 1999

Ms. Nancy Brighton
Environmental Analysis Branch
U.S. Army Corps of Engineers, New York District
26 Federal Plaza
New York, New York 10278-0090

Subject: Interim Report – Phase I Cultural Resource Investigation for the Stewart Airport Army Substation, Town of Newburgh, Orange County, New York (Contract DACW51-97-D-0010)

Dear Ms. Brighton:

Panamerican Consultants, Inc. (PCI) is pleased to submit this interim report for the above referenced project on behalf of Northern Ecological Associates, Inc. (NEA), Canton, New York. PCI, under contract to NEA and the New York District, U.S. Army Corps of Engineers (USACE), conducted a Phase IB cultural resource investigation at the Stewart Army Subpost (STAS), U.S. Military Academy, West Point, New Windsor and Newburgh Townships, Orange County, New York. The Phase I survey included the testing of seven archaeologically sensitive areas and the investigation of the southwest side of Prospect Hill to determine the presence of prehistoric and historic period sites, and to assess the impact that divestiture of STAS might have on these resources (Figure 1).

The area subject to archaeological survey totaled 100 acres (40 hectares) and was surveyed by PCI personnel during August 23 - 31, 1999. The field crew consisted of a field director and three field technicians.

A stratified field testing plan was implemented to identify large and small concentrations of prehistoric and historic period cultural remains within the study area. A pedestrian survey was conducted over the entire project area which identified suitable locations for shovel testing. Shovel test pits (STPs) were generally excavated at 50-foot (15-meter) intervals, although greater intervals were used in some areas to document disturbance (e.g., a 100-ft (30-m) interval was utilized in the southwestern section of Prospect Hill). A 50-ft (15-m) interval was maintained between transects. In the area of the Sayre-McGregor house (Area 1), a tighter 25-ft (7.5-m) interval between shovel tests and transects was used to locate cultural deposits and features. Because several shovel tests (11.2, 11.5, 11.6, and 11.7) contained nineteenth-century materials, additional radial shovel tests

were excavated at 5-ft (1.5-m) intervals to further define a potential artifact concentration or associated feature. The standard 50-ft (15-m) interval was used in potentially disturbed areas away from the house.

A total of 26 transects consisting of 204 shovel tests were placed within the project area. Transects were distributed as follows: Area 1 contained Transects 11 through 18; Area 2, Transects 20 through 22; Area 5, Transect 19; Area 7, Transects 1 through 10; and Area 8, Transects 23 through 25. Area 8 included Areas 3 and 4 and the designated rock-shelter area on the southwest portion of Prospect Hill. No shovel tests were excavated in Area 6 due of obvious disturbance from maintenance activities.

Shovel tests were excavated to culturally sterile soil, clear indications of disturbance, or bedrock (average depth was 6.5 in [16.5 cm]), and backfilled to natural contours upon completion. Excavated soils were matched to Munsell color charts and sieved through ¼-inch hardware screen. Recovered cultural materials were placed in plastic or paper bags and labeled with pertinent information in permanent ink. Modern material, such as plastic and container glass, were noted on field forms but not collected. Ambiguous historic period/modern materials, such as coal, red brick fragments, and miscellaneous nail fragments also were noted but not collected. All field information for shovel tests was recorded on shovel test forms, including shovel test location, natural or man-made disturbances in the area, and recovered cultural materials. The field director maintained a daily log book and photographed pertinent man-made disturbances, and environmental and cultural features. All shovel tests were marked on appropriate maps.

Soils within the project area are characterized as glacial till disturbed by grading and filling from a variety of activities including the construction of the Catskill Aqueduct located on the western edge of the project area; the relocation of Jackson Avenue; and the construction of the Stewart Airport and the subsequent Army Substation with its associated buildings, recreational areas, and maintenance activities (e.g., utilities, drainage and storage and work areas). Two soil strata were identified within the project area. The topsoil (averaging six in [15 cm] deep) generally consists of silts of various brown hues but also contains a range of brown silt loams. Stratum 2, the subsoil, generally consists of brown or light yellowish brown silts and sand, with pale brown clay appearing infrequently. Stratum 2 averaged five inches (13 cm) in thickness. STP 22.5 exhibited a third stratum of brown sandy silt but occurred at a depth of 6 to 10 in (15 to 25 cm) and may represent another instance of graded topsoil. Nearly the entire project area appears to have been disturbed as indicated by the presence of subsoil and/or fill within the top few inches of the vast majority of shovel tests.

Subsurface testing (STPs 11.5, 11.5+5'S, 11.6, 11.6+5'N, 11.6+10'N, 11.6+5'W, 11.6+5'E, 11.6+5'N/5'E, 11.7, 11.7+5'E, 11.5+5'N, 11.7+5'W) resulted in the identification of Feature 1, a concentration of historic material (i.e., construction debris, metal buttons and ceramics) in the backyard of the Sayre-McGregor House located in Area 1. Excavation Unit 1, measuring 6.5 x 7.0 ft (1.9 x 2.1 m), was placed to encompass STP 11.6, 11.6+5'E, 11.6+5'N, +5'E and 11.6+5'N with the southwest corner at STP 11.6. Sod was removed from the entire unit but since the northern half consisted of construction debris and ceramics within fill, only the southern half was excavated. The

unit was excavated in arbitrary 10-in (25-cm) levels to a depth of 24 inches (61 cm). The soil profile displayed a greater amount of disturbance than the adjacent shovel tests. Variations of dark brown silty loam characterized the top of the profile with lenses of lighter brown silty loam found throughout. Potentially intact subsoil consisting of brownish yellow silty clay was encountered at 20 inches (51 cm) below ground surface. Drawings, photographs and notes were completed and the unit was backfilled.

In summary, a total of 204 shovel tests and one excavation unit were excavated within the eight archaeologically sensitive areas at the Stewart Army Substation. While historic period artifacts were recovered, none were from intact deposits. No prehistoric or historic period sites were identified and no further work is recommended for the project area.

Sincerely,

Michael A. Cinquino

Michael A. Cinquino, Ph.D.
Vice President
Director, Buffalo Branch Office

cc: Ms. Beth Stuba, Northern Ecological Associates, Inc.

APPENDIX E

VITAE OF KEY PERSONNEL

PCI BUFFALO • TUSCALOOSA • MEMPHIS • TAMPA

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MICHAEL A. CINQUINO, Ph.D.

Senior Archaeologist, Vice President

EDUCATION

Ph.D. Anthropology, State University of New York at Stony Brook, 1986
M.A. Anthropology, State University of New York at Stony Brook, 1977
B.A. Sociology, St. John Fisher College, Rochester, New York, 1971

EXPERIENCE

Dr. Cinquino is currently a Senior Archaeologist with Panamerican Consultants, Inc. (PCI) and director of the Buffalo (New York) Branch Office New York. He has served as project manager/ principal investigator on over 70 cultural resources projects throughout New York, Pennsylvania, New Jersey, Puerto Rico, the U.S. Virgin Islands, and the United States. These projects include natural gas pipelines, developments, transportation projects, flood control projects for the Corps of Engineers, light rail rapid transit systems, industrial parks, wastewater treatment plants, fuel storage projects, interceptor sewers, a demolition project, construction monitoring, and U.S. military installations. In addition, he prepared numerous cultural resource sections for environmental assessment, impact statements, environmental resource documents, and cultural resource management plans and environmental audits.

He is experienced at conducting cultural resource investigations on large-scale projects including corridor pipeline and highway projects, military installations, wastewater projects, etc. which often require detailed archival and historic map research, design of field methodology including predictive site modeling strategies, all phases of archaeological field investigations, documentation and report preparation. He has conducted investigations at military installations throughout the Eastern United States, Puerto Rico and in the Virgin Islands.

Dr. Cinquino also has extensive regulatory experience on the federal and state levels as State Archaeologist and Review and Compliance Archaeologist for the Puerto Rico State Historic Preservation Office (SHPO) and as a consultant for the New York State Department of Environmental Conservation (NYSDEC) directing the cultural resource review for the NYSDEC permit program and SEQRA compliance. As an employee of Ebasco, he assisted in report reviews for the Federal Energy Regulatory Commission.

He is a member of the Register of Professional Archaeologists and certified in Field Research and Archaeological Resource Management. He is also on the New York State SHPO's list of archaeologists and a member of the New York Archaeological Council certified to conduct all phases of investigations in prehistoric and historic archaeology.

Dr. Cinquino has completed the hazardous waste training course and is familiar with archaeological investigations in areas of potential hazard (e.g., hazardous materials, unexploded ordnance).

REPRESENTATIVE PANAMERICAN CONSULTANTS, INC. EXPERIENCE

Currently, Dr. Cinquino is supervising cultural resource surveys for the Aguadilla Waterfront Erosion Control Project at Aguadilla and a flood protection project at Rio Culebrinas, Puerto Rico for the Jacksonville Corps of Engineers. Dr. Cinquino also conducted archival research for cultural resource investigations of a proposed flood protection project in Guánica, Puerto Rico.

Dr. Cinquino serves as PCI's Project Manager for pipeline projects conducted for National Fuel Gas Supply Corporation (NFGS) in Pennsylvania and New York (under contract to Northern Ecological Associates, Inc.). PCI's most recent projects for NFGS were a Phase I cultural resource survey for the proposed Line S-43 replacement in the Summit Township, Erie County, Pennsylvania, and a Phase I cultural resource survey for the proposed Line K replacement in the Town of Orchard Park, Erie County, New York.

Recently, he served as Project Manager/Co-Principal Investigator of twenty projects for the New York District, Corps of Engineers including preparation of Cultural Resource Management Plans for the Picatinny Arsenal, Dover, New Jersey, Watervliet Arsenal in Albany County, and Ft. Hamilton in Brooklyn, NY.; a Cultural Resource Investigation for the Joseph G. Minish Passaic River Waterfront Park in northern New Jersey; and Phase I/II archaeological investigations at the U.S. Military Academy at West Point, Seneca Army Depot.

He served as principal investigator for an intensive Phase I investigation of a proposed Veterans Drive Improvements Project in St. Thomas, U.S. Virgin Islands. The project consisted of archival investigations, shovel testing, and backhoe testing of an area adjacent to historic Fort Christian. Historic deposits were identified in the backhoe trenches and determined potentially eligible for listing to the National Register of Historic Places. The project also included an underwater component designed to identify any historic ship remains along the shoreline within the potential construction area.

Dr. Cinquino was principal investigator for the Phase I archaeological investigation of approximately 1700 acres of Griffiss Air Force Base in Rome, Oneida County, New York and annexes in Niagara County, under contract to Tetra Tech, Inc. He is currently serving as Principal Investigator for the subsequent Phase II investigation of 20 archaeological sites at Griffiss Air Force Base, Rome, NY to determine NR eligibility of these resources.

ADDITIONAL EXPERIENCE

Dr. Cinquino was employed by Ebasco Environmental, Inc. as archaeologist. His responsibilities included providing technical support to FERC staff, reviewing cultural resource reports and preparing documentation for FERC certificated EISs and EAs. He conducted various cultural resource projects including serving as co-principal investigator for a Stage 1A Cultural Resource Survey, Olean Superfund Site, Cattaraugus County, NY.

Puerto Rico State Historic Preservation Office (3 Years), San Juan, Puerto Rico

Dr. Cinquino served as State Archaeologist and Review and Compliance Archaeologist for the PRSHPO. His responsibilities included direction of Review and Compliance Section for Archaeology, review of Stage IA, IB, II, and III cultural resource reports, environmental assessments and impact statements for compliance of federal preservation laws and regulations, initial project assessment to determine level of archeological

investigation, review of archeological proposals to conduct site testing (Stage II) and data recovery/mitigation (Stage III) investigations, site inspection visits through the island, review of cultural resources for eligibility to the National Register of Historic Places. He helped develop and implement formal field investigation and report documentation standards at the PRSHPO and for the PR Advisory Council guidelines for local projects.

He was the SHPO representative on the Advisory Council for the Protection of Terrestrial Archeological Patrimony of Puerto Rico, and Secretary for the Advisory Council for the Conservation and Investigation of Underwater Archeological Resource of Puerto Rico. These advisory councils were responsible for preparing archeological standards, reviewing archeological proposals for Stage II and Stage III intensive investigation, reviewing archaeological reports focusing on intensive archeological investigations, implementing Puerto Rican cultural resource laws and regulations, and reviewing and approving permits to conduct underwater salvage and archaeological investigations, and also acting as an arbitration committee for any disputes concerning cultural resources regulation or report review standards. He also served as PRSHPO representative to the Interagency Meeting for permit review held by the Corps of Engineers with EPA and U.S. Fish and Wildlife Service to assess permit applications and potential environmental effects. In addition, Dr. Cinquino conducted seminars for government agencies and municipality officials concerning archeological investigations, federal laws and regulation, and the federal compliance process.

He served as Principal Investigator for the Ballaja Archaeological Project (for first six months of project). The Ballaja project was a Phase III archaeological data recovery of approximately a two-city block area for a three story underground parking facility and revitalization project in Old San Juan, Puerto Rico. His tasks, as principal investigator, included project organization, development of field strategy and methodology, and inspection and quality control of the field investigation.

NY State Department of Environmental Conservation, Regulatory Affairs, Albany, NY.

He was employed as Archaeological Consultant/Director of Cultural Resource Review for State Permits. His responsibilities included direction, coordination, and management of the statewide Uniform Procedure Act's permit program for compliance with the State Historic Preservation Act and State Environmental Quality Review Act (SEQRA). Responsibilities included review of 300 to 400 annual permit applications determining level of cultural resource survey, site testing, and mitigation required; critical report review, and, if required, State Register review (National Register process); developed and implemented survey standards and guidelines for the program; conducted training sessions to educate statewide department personnel concerning cultural resource management and compliance with the State Historic Preservation Act and SEQRA.

Ecology and Environment, Inc., Buffalo, New York (1980-1986)

As Senior Archaeologist Dr. Cinquino's responsibilities included conducting and directing archaeological field surveys and subsequent report preparation, project management, preparing technical proposals, manpower needs, and costing; conducting archival research and site file searches, and client relations including detailing their responsibilities in complying with New York State and Federal cultural resource laws. Conducted and directed field surveys in northeastern U.S. and Puerto Rico and prepared cultural resource sections for environmental impact statements and environmental assessments for numerous projects throughout New York, Puerto Rico and the United States. Conducted cultural resource surveys for a diversity of projects including rapid transit systems, municipal wastewater treatment projects, shopping malls, light industrial parks, natural gas transmission lines, and U.S. Naval installations.

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MICHELE HELENE HAYWARD, Ph.D.
Senior Archaeologist

EDUCATION

Ph.D. Anthropology, The Pennsylvania State University, 1986
M.A. Anthropology, The Pennsylvania State University, 1975
B.A. Anthropology, Beloit College, 1972

EXPERIENCE

Dr. Hayward has more than 20 years of experience conducting archaeological investigations and cultural resource management (CRM) projects throughout the Caribbean, Mexico, Central America, and the Eastern United States. Her experience in CRM consists of both reviewing projects and reports as a representative of the Institute of Puerto Rican Culture and conducting investigations for this agency and private firms. Dr. Hayward is fluent in Spanish and has extensive experience preparing documents and conducting interviews in Spanish. She is currently a Senior Archaeologist with Panamerican Consultants, Inc. (PCI). As Principal Investigator and Field Director for all levels of archaeological investigations, her duties include reconnaissance surveys and preliminary and intensive data recovery excavations of prehistoric and historic sites; archival research; and historic and prehistoric data analysis. She has extensive experience in report preparation and proposal writing as well as designing archaeological field strategies at all levels.

She has served as Principal Investigator and Field Director and Laboratory Director for Phase II testing of two prehistoric sites within the municipios of Dorado and Toa Baja, Puerto Rico, for the Río de la Plata flood control study for the Jacksonville District, U.S. Army Corps of Engineers (USACE). She has conducted other intensive excavations for the Corps of Engineers in the Caribbean, including a data recovery project (Phase III) at El Morro fort in San Juan, Puerto Rico, and a Phase I and II investigation for the Río Grande de Arecibo flood control project in Puerto Rico.

Dr. Hayward served as the Principal Investigator for the Aklis archaeological investigation (Phase III) conducted for the National Park Service at the U.S. Fish and Wildlife Refuge in St. Croix, U.S. Virgin Islands (USVI). Her duties included field testing, laboratory analysis and report writing.

She has also served as Research Archaeologist and Project Review Archaeologist for the Center of Archaeological Investigations, Institute of Puerto Rican Culture, San Juan, Puerto Rico. Her duties included the initial assessment of some 600 to 800 annual permit applications for state and privately funded construction projects to determine the level of archaeological investigation; review of CRM reports for Phase I, II, and III projects; review of proposals for Phase II and III investigations; preparation of detailed scopes of work for Phase II and III studies; meetings with applicants, both private and public, to discuss the level of project effort; and Principal Investigator on Institute-sponsored archaeological research projects.

While employed by the Institute of Culture, Dr. Hayward received a grant from the National Endowment for the Arts to conduct a field documentation of four Precolumbian rock art sites in Puerto Rico. The grant was renewed for a second year.

REPRESENTATIVE PANAMERICAN CONSULTANTS, INC. EXPERIENCE (1992 to Present)

Dr. Hayward is currently Principal Investigator for the mitigation of prehistoric site LO-9 at Piñones, Puerto Rico for the Jacksonville District, USACE. Site LO-9 is included in the Piñones National Register District and listed on the National Register of Historic Places (NRHP) as a contributing element to the district. The excavation of four block areas (two 1-x-2 meter and two 2-x-2 meter areas) produced a high concentration of ceramics and other materials. The analysis of the artifacts, faunal material and the archaeobotanical samples remains to be undertaken by Dr. Hayward and other specialists, in addition to the report writing.

She was Principal Investigator for a Phase I survey at the Herkimer Home, Herkimer County, New York. The project was conducted for the New York State Canal Corporation and the New York State Office of Parks, Recreation and Historic Preservation. Although the project area was only approximately one-half acre, the surface and subsurface investigation confirmed the results of a previous investigation (1993) that a prehistoric site was present in or near the proposed dock area along the Mohawk River/Erie Canal. The dock facilities will impact only a portion of the site which most likely extends beyond the current project limits. Dr. Hayward recommended that the site be considered significant and potentially eligible to the NRHP.

In 1997, Dr. Hayward served as Principal Investigator, Co-Field and Laboratory Director for an intensive investigation at the prehistoric ceramic period site of Aklis (12VAml-42). The site is partially located within the Sandy Point National Wildlife Refuge and on private property in the southwest portion of St. Croix, USVI. The project was conducted under contract to the National Park Service, Southeast Region. The investigation involved the elaboration of research questions, field excavations, the collection of field samples for specialized faunal and botanical studies, and the gathering of background information on the environment and the local and general culture history. The field portion of the project entailed the excavation of shovel tests, five 2-x-2 meter units, one 1-x-1 meter unit, the production of a detailed map of the site on Refuge property, and the profiling of approximately 50 meters of the exposed western shoreline boundary. Dr. Hayward analyzed the ceramic material and related the results to the research issues involving the spatial and chronological placement of Aklis within the wider prehistoric Caribbean region and the definition of Aklis' cultural material, settlement and subsistence patterns.

She served as Principal Investigator, Co-Field Director, and Laboratory Director for Phase I and II investigations in connection with the Río Grande de Arecibo Flood Protection Project for the Jacksonville District, USACE. Phase II investigations were carried out at four sites—AR-11 (a low density habitation site), AR-12 (a predominately historic household complex with a light concentration of prehistoric material), AR-13 (a primarily moderate to light scatter of historic material with a low density of prehistoric material), AR-14 (part of the San Francisco Hacienda). Bridge No. 54 over the Perdomo Channel of the Río Grande de Arecibo delta system was also evaluated for its eligibility to the NRHP. Two of the archaeological sites—AR-12 and AR-14—and Bridge No. 54 were determined eligible to the NRHP; the other two sites and four additional low density historic scatters located during the survey were not recommended for eligibility.

She was Co-Principal Investigator for an intensive search of archives and other repositories in Washington, D.C., and South Carolina for primarily original documents and secondarily published sources pertaining to Parris Island, South Carolina, from 1862 to 1892. Parris Island currently is one of two Marine Corps recruit training centers in the U.S. On the basis of this documentation a history of the island during the postbellum period was outlined. This documentation served to identify archaeologically sensitive areas on Parris Island (e.g., African-American homesteads, lighthouse complex, dry dock, the original Commanding Officer's quarters) during this period, and to assess the potential for further research of the several topics covered during the course of the investigation. The project was undertaken for the Savannah District, USACE.

In 1993/1994 Dr. Hayward served as Principal Investigator and Field/Laboratory Director for PCI's data recovery investigation (Phase III) of two historic deposits at the Spanish Colonial period fort, San Felipe del Morro in San Juan, Puerto Rico. The work was conducted under contract to the Jacksonville District, USACE. Six-weeks of intensive field work entailed: the excavation of a 2-meter wide trench in the central portion of Midden Area 2 located on a rock ledge at the base of the fort's wall; the excavation of half of a 5-x-4 meter block of 1-x-1 meter units in Midden Area 1 within El Morro's grounds; and the establishment of a concomitant-to-the-field-work laboratory for preliminary analysis. Dr. Hayward analyzes the historic period artifacts, and served as the principal author of the final report which incorporated the results of all of the specialized studies as they related to issues or hypotheses regarding the depositional history of the middens and the nature of military life, socioeconomic status and subsistence at El Morro.

ARCHAEOLOGICAL LABORATORY EXPERIENCE

Dr. Hayward has served as Laboratory Director, taught laboratory methods at the graduate level, and recently served as Laboratory Director and supervisor on PCI projects, including the El Morro mitigation project (San Juan, Puerto Rico) and the Aklis prehistoric site at Sandy Point Wildlife Refuge (St. Croix, USVI).

Her archaeological laboratory experience includes the identification and inventorying of historic and prehistoric material from a variety of culture areas and periods including the United States, and the teaching of a graduate course in laboratory methods in Puerto Rico.7

As Laboratory Director her activities included the analysis of prehistoric material from two sites located during a Phase I survey for the Río Anton Ruiz Flood Control Study, Humacao, Puerto Rico. The project was undertaken for the Jacksonville District, USACE.

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ELIZABETH S. BURT
Staff Archaeologist

EDUCATION

M.A. Anthropology, State University of New York at Stony Brook (1978)

B.A. Anthropology, State University of New York at Brockport (1974). Minor in Latin American Studies.

EXPERIENCE

Ms. Burt is currently a Staff Archaeologist with Panamerican Consultants, Inc. (PCI) at the Buffalo (New York) Office. While serving as a principal investigator and field director, Ms. Burt has coordinated and supervised all phases (I, II, and III) of field investigations, artifact preparation and analysis, and archival and background research. Her other responsibilities include data analysis and report writing. Her expertise includes both prehistoric and historic period archaeology as well as excavations in urban settings. Ms. Burt was a Ph.D candidate in the anthropology program at the State University of New York at Stony Brook (1979-1990) with an emphasis on New World Archaeology, Northeastern Archaeology, state development and settlement patterns.

Ms. Burt has served as Co-principal Investigator and/or Field Director for seven (7) projects at the U.S. Military Academy (USMA) at West Point, New York for the New York District Corps of Engineers (USACE). These projects included five (5) Phase I cultural resources investigations (for the Stony Lonesome Child Development Center, the Stony Lonesome One-Stop Shopping Center [PX], the Cat Hollow Swamp/Beaver Pond Timber Harvest, the proposed Long Pond/Stillwell Lake Timber Harvest, and in 1998 for the proposed Firebreak 2 Timber Harvest), one Phase II investigation (for the proposed Stony Lonesome PX), and one Phase III data recovery project (Revolutionary War Hut Site #6).

In 1998, she served as Field Director or Co-principal Investigator for a Phase I cultural resources survey for the Town of Concord Pump Station, Erie County, New York, a Phase I investigation of the Doland House and the former Naval Air Rocket Test Station (NARTS) area at Picatinny Arsenal, Dover, New Jersey, and a Phase I survey for the middle basin of the Green Brook Flood Control Project, Plainfield-North Plainfield, New Jersey.

In 1997, she served as Field Director for the Phase I cultural resource survey of the proposed French Road Commons in the Town of Cheektowaga, Erie County, New York, and Phase I cultural resource survey of the proposed Next Generation Weather Radar (NEXRAD) in the Town of Montague, Lewis County, New York. Ms. Burt also served as Field Director for the Phase II investigation of Site 3 at Griffiss Air Force Base, Oneida County, New York.

Ms. Burt was Assistant Field Director for the Phase II testing of 20 archaeological sites at Griffiss

Air Force Base in Rome, New York. She also served as Assistant Field Director for the Phase I investigation of 1700 acres at Griffiss Air Force Base, Rome, New York for Tetra Tech. Her responsibilities included directing an 11-person crew, archival research, analysis, and report writing. The investigation identified 24 archaeological sites, of which 20 were determined potentially eligible for the National Register of Historic Places (NRHP).

In addition, Ms. Burt served as field director for PCI's data recovery project at El Morro Historic Fort in Old San Juan, Puerto Rico for the Jacksonville District Corps of Engineers.

She served as Field Director for the Phase II investigation of the Morris Canal right-of-way for the Joseph G. Minish Passaic River waterfront park in Newark, New Jersey. The project was prepared for the New York District, USACE under contract to Northern Ecological Associates, Inc. The investigation involved a pedestrian survey of the project area and the excavation of a series of eight backhoe trenches. The excavation of eight trenches (totaling 379 linear feet) to a depth of four feet (1.2 m) ensured that any canal features would be identified. Ms. Burt's responsibilities included the supervision of three field technicians and monitoring of backhoe trenching. Her other field responsibilities included the documentation of the excavations through the use of standardized field forms, drawings of soil profiles and features; and photographing various aspects of the field and laboratory results.

Ms. Burt has experience as an Archaeological Conservation Laboratory Research Assistant and Archaeology Field Crew Member for Archaeology Unit, New York State Office of Historic Preservation, Peebles Island, Waterford. Responsibilities included: archaeological field excavation; processing and analyzing various archaeological collections including French, Dutch, British and American materials; archival research relating to artifacts, sites or specific research topics; supervision of volunteers and interns; preparation of monthly reports; participation in departmental and bureau staff meetings; and preparation of research and site reports.

She has served as Field Director for the Phase III data recovery for Ballaja Archaeological Project in San Juan, for the Puerto Rico State Historic Preservation Office (PRSHPO). The project encompassed approximately two city blocks for a three-story underground parking facility. Tasks included supervising two crew chiefs, six field technicians, one backhoe operator while removing overburden to expose archaeological deposits. Other responsibilities included coordinating field, administrative and laboratory work.

REPRESENTATIVE PANAMERICAN CONSULTANTS, INC. EXPERIENCE (MAY 1993-PRESENT)

Ms. Burt is currently co-principal investigator and/or field director for seven (7) projects at the USMA at West Point, New York for the New York District, USACE. These projects included five (5) Phase I investigations, one Phase II investigation, and one Phase III data recovery project. Her responsibilities include directing a 12-person crew, documentary research, artifact analysis and report writing. These projects are being conducted for construction of a child development center, a new

PX, and three proposed timber harvests. Both prehistoric and historic period sites have been identified during the field investigations.

In 1996, she served as co-principal investigator and field director for the Phase I survey of the Green Brook Flood Control Project in Union and Somerset Counties, New Jersey. Two prehistoric and five historic period sites were identified.

In October 1995, Ms. Burt served as assistant field director for Phase II testing of 20 archaeological sites at Griffiss Air Force Base in Rome, New York under contract with Tetra Tech, Inc. Her responsibilities included directing an 11-person crew, archival research, artifact analysis, and report writing. Six sites were determined eligible for listing to the NRHP.

In September 1995, Ms. Burt served as a contributing author to the report for the Phase II site testing investigation and Phase I archaeological investigation for the Río Anton Ruiz flood control project in the municipio of Humacao, Puerto Rico for the Jacksonville District Corps of Engineers.

Ms. Burt served as assistant field director for a Phase I investigation of 1700 acres at Griffiss Air Force Base, Rome, New York for Tetra Tech, Inc. Her responsibilities included directing an 11-person crew, archival research, analysis, and report writing. The investigation identified 24 archaeological sites, of which 20 were determined potentially eligible for the NRHP.

During 1994-1998 Ms. Burt conducted a variety of Phase I site file and field investigations for various projects throughout New York State. Her most recent work was for various projects under contract to the New York District, USACE, and several private developers. In 1998 she served as field director or co-principal investigator for a Phase I cultural resources survey for the Town of Concord Pump Station, Erie County, New York, a Phase I investigation of the Doland House and the former NARTS area at Picatinny Arsenal, Dover, New Jersey, and a Phase I survey for the proposed Firebreak 2 Timber Harvest at the USMA, West Point, New York. In 1997 she served as field director for Phase I cultural resource surveys of the Proposed French Road Commons, Town of Cheektowaga, Erie County, New York, and the proposed NEXRAD site in the Town of Montague, Lewis County, New York.

She was field director for a Phase III data recovery project at San Felipe del Morro Historic Fort in San Juan, Puerto Rico for the Jacksonville District, USACE which was funded by the National Park Service. Her responsibilities included directing a six-person crew, analyzing artifacts and contributing to the project report.

TRAFFIC IMPACT STUDY

NEW YORK INTERNATIONAL PLAZA RE-DEVELOPMENT

NEW WINDSOR, NEW YORK

Prepared for:
First Columbia International Group L.L.C.
Latham, New York

Prepared By:

BL Companies
Engineers/Planners/Surveyors/Landscape Architects
Poughkeepsie, New York

December 2002

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EXECUTIVE SUMMARY

First Columbia is proposing the re-development of New York International Plaza in New Windsor, New York. The site is located on the property formerly known as the Stewart Army Subpost and currently owned by the Town of New Windsor. The re-development will consist of the construction of approximately 2 million square feet of mixed-use building space. However, for the purpose of this study, a mixed-use development totaling approximately 2.5 million square feet was used. Proposed and studied uses include: office space, a production/warehouse facility, education facilities, corporate housing, hotels, a convention center, restaurants, a service station and retail. Full build out of this project is anticipated by the year 2015.

The site is situated north of Route 207, with Breunig Road and Stewart International Airport bordering the site to the east, the New York City Aqueduct to the west, and Reed Street and the U.S. Army Reserve property to the north. Major access will be provided via a new I-84 Interchange at the existing Drury Lane overpass, and an East-West Connector Road from Drury Lane (as proposed in the March 2000, Stewart Airport Access Improvement, FDR/FEIS). Additional access will be provided from Route 207 via Breunig Road and Hudson Valley Road (currently known as Avenue of the Americas).

This study evaluated roadway conditions at the time of full build out of this re-development project during the weekday morning and afternoon commuter peak traffic periods. These are the typical study periods for a development consisting mostly of office, education, and research and development type land uses. The re-development is anticipated to generate a total of about 2900 new vehicle trips during the weekday morning peak hour and 3150 during the weekday afternoon peak hour. Capacity analyses were performed to evaluate roadway conditions at the time of full build out of the proposed re-development. In order to provide acceptable intersection operations at key intersections within the study area potential roadway improvements were identified. The study area includes various intersections with Route 207, Breunig Road, International Boulevard (formerly known as C Street), and Airport Center Drive (formerly known as D Street). The study area was chosen based on the trip distribution and traffic volumes anticipated for the development.

The base roadway configuration and traffic control was a combination of existing conditions and currently proposed improvements. Specifically, these improvements include the reconstruction of International Boulevard through a New York State Thruway Authority project (Contract D211816), as well as improvements proposed in the Stewart Airport Access Improvement FDR/FEIS. These include: the construction of a new I-84 interchange at the existing Drury Lane overpass; an east-west Connector Road from Drury Lane to International Boulevard; and improvements proposed in the

Stewart International Airport 1998 Airport Master Plan Update to modify some internal circulation.

The New York Department of Transportation (NYSDOT), in conjunction with the construction of two buildings included in the New York International Plaza project (a production/warehouse facility and a medical office building), has recently approved the signalization of the Route 207 at Hudson Valley Avenue (formerly Avenue of the Americas) intersection. As part of the signalization, Route 207 has been widened and re-striped to provide an eastbound exclusive left turn lane and a westbound exclusive right turn lane.

Based on the results of this traffic study, the following potential improvements are identified to provide/maintain acceptable intersection operations after the re-development of New York International Plaza:

- **Route 207 at Route 300 (westerly junction)** – Increase traffic signal cycle lengths for both the morning and afternoon peak hours and modify signal timings.
- **International Boulevard/Connector Road at World Trade Way** – Widen the eastbound Connector Road approach to provide an exclusive right turn lane. Re-stripe the northbound World Trade Way approach to provide an exclusive left turn lane and a shared left/through/right turn lane and widen the northerly side of the Connector Road to provide the proper acceptance width for the dual left turn movement.
- **International Boulevard at Aviation Avenue (formerly 4th Street)** – Re-stripe the Aviation Avenue northbound approach to provide a left turn lane and a shared left/through/right turn lane. Widen the northerly side of International Boulevard to accept the dual left turn movement from Aviation Avenue.

- **Airport Center Drive (formerly D Street) at Aviation Avenue (formerly "4th Street)/Hudson Valley Avenue (formerly Avenue of the Americas)** – Reconstruct the northeasterly corner of the intersection to provide a channelized right turn lane. Modify the traffic control by removing the existing stop signs from the Hudson Valley Avenue and Aviation Avenue approaches and installing stop signs on the Airport Center Drive approaches.

- **Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue** – Modify the traffic control to provide stop signs on both the Bill Larkin Drive and Tozzoli Avenue approaches.

These intersection improvements are anticipated to accommodate the traffic generated by the proposed re-development while providing acceptable intersection operations.

Since this project, like many large developments, will be built in phases, the development thresholds (the amount of proposed re-development that can be built prior to the need to implement roadway improvements) associated with the anticipated traffic improvements were estimated.

It was estimated that minimal improvements will be necessary at the start of the re-development of New York International Plaza. Specifically these improvements include the traffic control modifications at the Airport Center Drive intersections with Aviation Avenue/Hudson Valley Avenue and Bill Larkin Drive/Tozzoli Avenue (providing/relocating stop signs). The remaining roadway improvements are anticipated to be needed after about 70 percent of the re-development is constructed. The following relates the amount of development that can be completed prior to installation of the listed improvement:

- After about **70 percent (or about 1,750,000 square feet)** of re-development completion the improvements associated with the double left turn movement at the World Trade Way at Connector Road/International Boulevard intersection are anticipated to be needed.

- After about **80 percent (or about 2,000,000 square feet)** of re-development completion the improvements associated with the double left turn movement at the International Boulevard at Aviation Avenue intersection are anticipated to be needed.

- After about **85 percent (or about 2,125,000 square feet)** of re-development completion the improvements associated with exclusive right turn lane at the eastbound Connector Road approach at the World Trade Way intersection with the Connector Road and International Boulevard are anticipated to be needed.

- And after about **90 percent (or about 2,325,000 square feet)** of re-development completion the channelized right turn lane improvement at the Airport Center Drive at Aviation Avenue and Hudson Valley Avenue is anticipated to be needed.

It is recommended, as the project reaches these thresholds, that the need for the implementation of these or similar roadway improvements be monitored.

PART I

INTRODUCTION

First Columbia is proposing the re-development of New York International Plaza in New Windsor, New York. The site is located on the former Stewart Army Subpost property and currently controlled by the Town of New Windsor. The re-development will consist of the construction of approximately 2 million square feet of mixed use building space. However, for the purpose of this report traffic volumes and analyses were based on a development of about 2.5 million square feet. Uses include: office space, a production/warehouse facility, education facilities, corporate housing, hotels, a convention center, restaurants, a service station and retail. Full build out of this project is anticipated by the year 2015.

The site is located along the northerly side of Route 207, with Breunig Road and Stewart International Airport bordering the site to the east, the New York City Aqueduct to the west, and Reed Street and the United States Army Reserve property to the north. Major access will be provided via a new I-84 Interchange at the existing Drury Lane overpass and an east-west Connector Road from Drury Lane (as proposed in the March 2000, Stewart Airport Access Improvement, FDR/FEIS). Additional access will be provided from Route 207 via Breunig Road and Hudson Valley Road (currently known as Avenue of the Americas).

This study investigated the traffic impacts associated with the proposed re-development during the weekday morning and afternoon commuter peak traffic periods. These are the typical study periods for a development consisting mostly of office, education, and research and development type land uses. Based on the analyses described in this report, recommendations are made to mitigate the impacts of the proposed re-development on the study area roadway network. The study area was chosen based on the trip distribution and traffic volumes anticipated for the development.

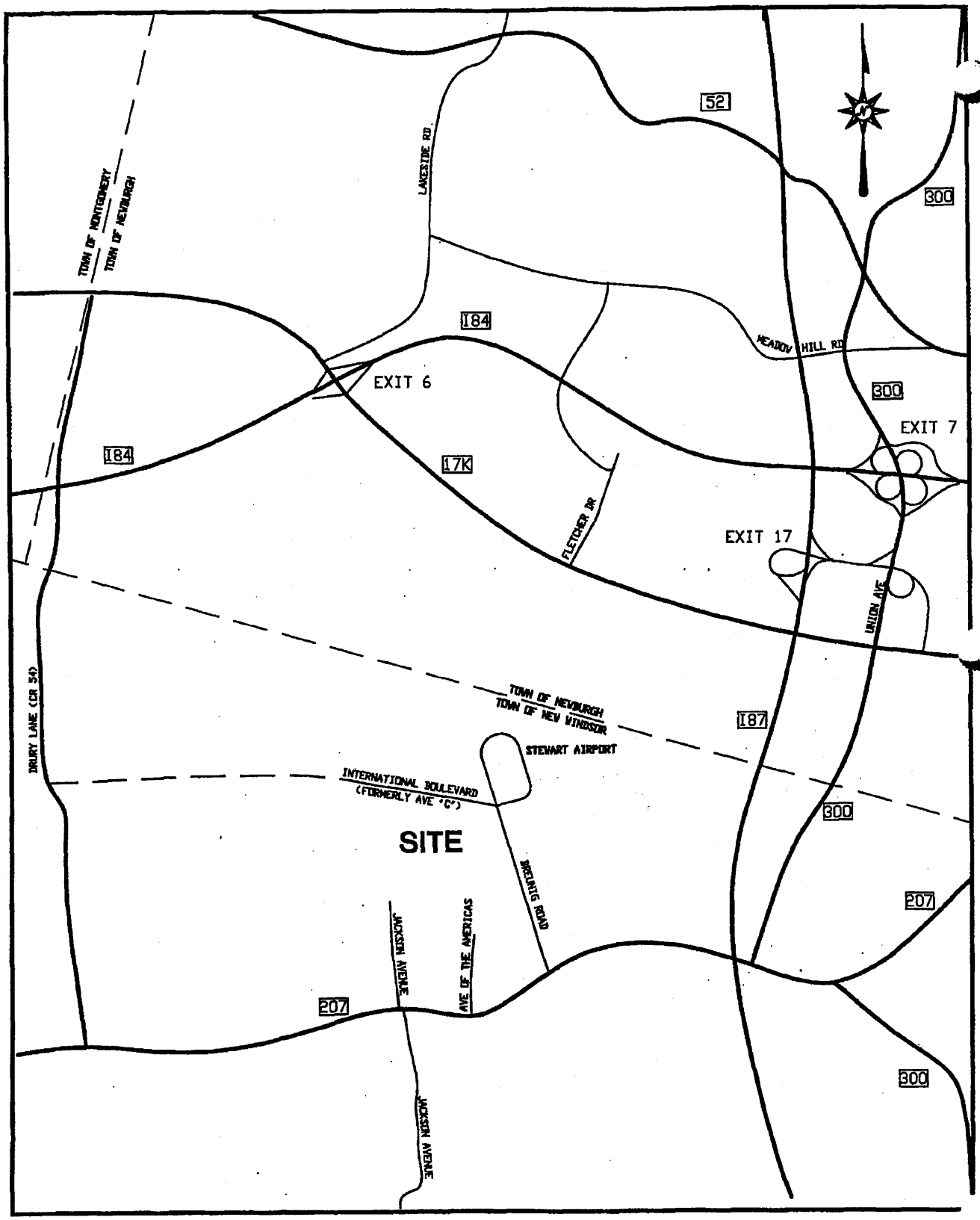
PART II

BASE ROADWAY CONDITIONS

An investigation of the existing conditions of the study area roadway network, proposed roadway modifications (i.e. relocating and eliminating roads) proposed by the New York International Plaza redevelopment project and proposed roadway improvements by others formed the basis for determining the traffic impacts of the proposed re-development. Specifically, this investigation included a detailed field reconnaissance, review of the proposed New York International Plaza site roadway network and review of the March 2000, Stewart Airport Access Improvement Final Design Report/Final Environmental Impact Statement (SAAI FDR/FEIS) and the 1998, Stewart International Airport, Airport Master Plan Update, Draft Technical Report. Since the SAAI FDR/FEIS is a final design report and environmental impact statement with approved traffic volumes and roadway improvements, it was chosen as the primary source of data.

Existing Access Network

As illustrated in Figure 1, major roadways in the vicinity of the site include Interstate 87 (New York State Thruway), Interstate 84, Route 17K, Route 300, Route 207 and Drury Lane (County Road 54). Currently, direct access to the site is provided from Route 207 via Breunig Road and Hudson Valley Avenue. Breunig Road also provides access for the Stewart International Airport and the U.S. Army Reserve property north of the New York International Plaza site. The Hudson Valley Avenue is temporarily closed, however, will be re-opened after installation of a traffic control signal at the Route 207



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LOCATION MAP
NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR, NEW YORK

SCHEMATIC, NOT TO SCALE

FIGURE 1

2/14/01

CAD File: TDC87901

intersection which has been approved by the New York State Department of Transportation (NYSDOT). Previously, additional access to the site was provided from Route 207 via Jackson Avenue which is currently closed to Route 207.

Planned Roadway Improvements

Various roadway improvements are currently proposed and/or under construction on the surrounding roadway network, as well as, on roadways within the New York International Plaza site. For the purpose of this report it was assumed that all of the improvements will be in place for full build out of the New York International Plaza re-development design year (2015). A brief description of the improvements is summarized below and a detailed description of the impact to the study intersections geometrics and traffic control is discussed in the corresponding section.

New York State Thruway Authority Contract D211816, Reconstruction of C Street

This project is currently under construction and includes the complete reconstruction of C Street (a.k.a. International Boulevard) from Airport Center Drive to Breunig Road. The roadway cross section will consist of two through lanes (12' wide inside lane, 14' wide curb side lane) in each direction separated by a raised median (12' wide). A sidewalk will be provided along the northerly side of the roadway.

Stewart Airport Access Improvement

The March 2000 Stewart Airport Access Improvement Final Design Report/Final Environmental Statement (SAAI FDR/FEIS) proposed action to improve access to the

Stewart International Airport. Presently traffic to and from the airport traveling along I-84 and I-87 must access the airport via the local street network; Route 17K, Route 300, Route 207, and Breunig Road. The preferred access improvement plan, Alternative 5b, Option 3, included, but was not limited to, a new interchange on I-84 at the existing Drury Road overpass, a new four-lane East-West Connector Road from Drury Lane to International Boulevard, widening Drury Lane between the new interchange and the East-West Connector Road, addition of auxiliary turning lanes at the intersection of Route 207 and Drury Lane, and modifications to Breunig Road near the airport Loop Road. NYSDOT Contract D259060, for construction of the new interchange was let in September 2002. Construction is anticipated to take two years.

Stewart International Airport, Airport Master Plan Update

Based on information provided in the 1998 Stewart International Airport, Airport Master Plan Update, Draft Technical Report (SIA Update), modifications were proposed for internal circulation roadways, including relocation of the airport Loop Road entrance from the intersection of Breunig Road at Tozzoli Avenue (a.k.a. X Street) to the intersection of Breunig Road at International Boulevard. Additional changes included closing access to both Reed Street (formerly "B" Street) and Aviation Avenue (formerly 4th Street) from Breunig Road and closing access to Raz Avenue (5th Street) from International Boulevard.

Proposed New York International Plaza Site Roadway Modifications

Modifications to the existing New York International Plaza roadway system are proposed as part of the re-development project and include the following.

Relocate and Extend Hudson Valley Avenue – The southerly end of Hudson Valley Avenue will maintain its existing intersection location with Route 207. The remainder of the roadway will be relocated to the east and extended north to the existing termination of Hudson Valley Avenue. A new intersection with Avenue of the Americas will be created.

Relocate Sue Kelly Avenue – Sue Kelly Avenue at its existing location will be removed and rebuilt approximately 950 feet to the south. It will maintain its connection between Breunig Road and Avenue of the Americas.

Remove Tozzoli Avenue north of International Boulevard – The section of Tozzoli Avenue located north of International Boulevard, between International Boulevard and Breunig Road will be removed.

Remove section of Hudson Valley Avenue – Just west of the Hudson Valley Avenue intersection with Airpot Center Drive and Aviation Avenue there is an approximately 150 foot section roadway that appears to originally have been intended for by-pass of this intersection. This piece of road will be removed.

Corporate Housing Access Roads – The corporate housing to be located along the westerly border of the site off of World Trade Way will have access roads provided from World Trade Way. These roads may become public roads.

Intersection Geometrics and Control

Route 207 at Drury Lane is an unsignalized T-type intersection. Route 207 forms the eastbound and westbound approaches, providing one 11' wide approach lane each. The third leg is formed by Drury Lane, providing a single 10' wide southbound approach lane. The Drury Lane approach is stop sign controlled.

Improvements are proposed for this intersection in the SAIA FDR/FEIS and include widening of all three legs of the intersection. The eastbound Route 207 approach will provide an exclusive left turn lane and a through lane, each 12' wide. The westbound Route 207 approach will provide a 12' wide shared through/right turn lane. The southbound Drury Lane approach will provide an exclusive left turn lane and an exclusive right turn lane, each 12' wide. Although not specifically stated in the SAIA FDR/FEIS, based on traffic volumes and lane striping (stop bars on each approach), it was assumed that this intersection will be signalized.

Route 207 at Hudson Valley Avenue (formerly Avenue of the Americas) is also an unsignalized T-type intersection. Route 207 provides one 11' wide lane in each direction.

Two buildings included in the New York International Plaza re-development plan have recently been constructed and include an approximately 220,000 square foot production warehouse facility and a 50,000 square foot medical office building. As part of these developments the Hudson Valley Avenue approach to Route 207 will be opened and Hudson Valley Avenue will be widened. The Hudson Valley Road southbound approach will provide a 10' wide right turn lane and an 11' wide left turn lane.

The New York Department of Transportation (NYSDOT) has recently approved the installation of a traffic signal at this location. As part of the signalization, Route 207 has been widened and re-striped to provide an eastbound exclusive left turn lane and a westbound exclusive right turn lane.

Route 207 at Breunig Road is a signalized T-type intersection. The eastbound Route 207 approach provides an 11' wide shared left/through lane while the westbound approach provides an 11' wide through lane and a 12' wide channelized right turn lane. The southbound approach provides exclusive left and right turn lanes, 12' wide and 13' wide, respectively. A service station is located along the southerly side of Route 207 at this intersection with two curb cuts within the intersection area, neither of which are signalized.

Route 207 at Route 300 (westerly junction) is also a signalized T-type intersection. The eastbound Route 207 approach provides an exclusive left turn lane and a through

lane and the westbound Route 207 approach provides a through lane and an exclusive right turn lane. The southbound Route 300 approach provides dual left turn lanes and an exclusive right turn lane.

The intersection of **Breunig Road at Sue Kelly Avenue** will be relocated. Sue Kelly Avenue is currently an east/west oriented roadway that provides connection between Breunig Road and Airport Center Drive (formerly D Street). Sue Kelly Avenue in its current location will be removed for development and relocated about 950 feet to the south, providing connection between Breunig Road and Avenue of the Americas.

The new Breunig Road at Sue Kelly Avenue intersection will be an unsignalized T-type intersection. The eastbound Sue Kelly Avenue approach will provide a single 15' wide lane and will be stop sign controlled. Breunig Road in this location is currently three lanes wide, with one southbound lane and two northbound lanes consisting of a left turn lane and a through lane.

The intersection of **International Boulevard at World Trade Way (formerly 6th Street)** currently forms a T-type unsignalized intersection with International Boulevard forming the third leg. World Trade Way provides one 19' wide lane on both the northbound and southbound approaches to the intersection. International Boulevard is under construction, NYSTA Contract D211816, and closed to traffic. Under NYSTA Contract D211816, International Boulevard will provide a two-lane approach to World Trade Way. The World Trade Way approaches will be stop sign controlled.

Additional modifications to this intersection are proposed as part of the SAAI FDR/FEIS. The east-west Connector Road will form a fourth leg to this intersection directly opposite the International Boulevard approach. The eastbound east-west Connector Road approach will provide an exclusive left turn lane, a through lane, and a shared through/right turn lane, each 12' wide. The International Boulevard approach will provide a 12' wide exclusive left turn lane, a 12' wide though lane, and a 14' wide shared through/right turn lane. It was assumed that this intersection will be signalized.

International Boulevard at Aviation Avenue (formerly 4th Street), a four-legged intersection, is currently closed due to reconstruction of International Boulevard. The northbound and southbound Aviation Avenue approaches both provide one 19' approach lane each. After completion of the NYSTA C Street reconstruction project and implementation of the SAAI FDR/FEIS improvements both the eastbound and westbound International Boulevard approaches will provide a 12' wide exclusive left turn lane, a 12' wide through lane, and a 14' wide shared through/right turn lane. It is assumed based on proposed geometry, striping and the traffic volumes presented in the SAAI FDR/FEIS that this intersection will also be signalized as part of the airport access improvements.

International Boulevard at Breunig Road is also a four-legged unsignalized intersection and currently closed due to reconstruction of International Boulevard. After reconstruction of International Boulevard and relocation of the airport Loop Road to this

intersection, the intersection will be a four-legged intersection with the Loop Road as the northerly leg (one-way southbound towards the intersection) and easterly leg (one-way eastbound away from the intersection), International Boulevard the westerly leg, and Breunig Road the northerly leg.

The northbound Breunig Road approach will provide a shared left/right turn lane (assumed 12' wide), the southbound airport Loop Road approach will provide a shared left/through lane and an exclusive right turn lane (assumed 12' wide each), and the International Boulevard eastbound approach will provide a through lane (12' wide) and an exclusive right turn lane (14' wide). It was assumed that this intersection will be signalized as part of the airport access improvements.

World Trade Way at Airport Center Drive is a three-legged unsignalized intersection. World Trade Way forms the northbound and southbound approaches and Airport Center Drive the westbound approach. The southbound World Trade Way approach is stop sign controlled. Each approach provides one lane at approximately 19' wide.

Airport Center Drive at Hudson Valley Avenue/Aviation Avenue is a four-legged unsignalized intersection. Hudson Valley Avenue forms the northbound approach, Aviation Avenue the southbound approach and Airport Center Drive the eastbound and westbound approaches. The northbound Hudson Valley Avenue and southbound Aviation Avenue approaches are stop sign controlled. Each approach provides one lane at approximately 19' wide.

Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue is also a four-legged unsignalized intersection with Bill Larkin Drive forming the northbound approach, Tozzoli Avenue the southbound approach, and World Trade Way the eastbound and westbound approaches. The northbound Bill Larkin Drive approach is closed. The southbound Tozzoli Avenue approach is controlled with a yield sign and each approach provides one 19' wide lane each.

PART III

TRAFFIC VOLUMES

Anticipated traffic volumes were estimated to determine the traffic impact of the proposed re-development upon the study area intersections. These traffic volumes were developed based on traffic volumes and trip distribution approved in the SAAI FDR/FEIS, as well as, information provided in Trip Generation, sixth edition, published by the Institute of Transportation Engineers (ITE). Estimated site traffic volumes were determined, assigned to the roadway network, and superimposed onto anticipated year 2015 background or no build traffic volumes.

2015 Background/No Build Traffic Volumes

The 2015 background or no build traffic volumes were developed directly from the design year 2022 traffic flow figures contained in the SAAI FDR/FEIS and supplemented with data for additional proposed development not included in the SAAI FDR/EIS. The SAAI FDR/FEIS design year 2022 traffic flow figures were based on 1997 existing traffic volumes which were disaggregated into the Stewart International Airport traffic volumes, other on-airport land uses (i.e. military, industrial), and through traffic and increased with various growth rates to the year 2022. Traffic volumes associated with other proposed developments along Route 17K and Route 300, as well as, the Drury Lane Office Park (part of the "Stewart International Airport Properties") were also included. A portion of these volumes were removed from the design year

2022 traffic flow figures, to reflect the year 2015 (the design year for the New York International Plaza re-development). Traffic volumes associated with Stewart Terrace, the re-development of a military housing complex, located west of the New York International Plaza site were added, yielding the 2015 design year background traffic volumes, illustrated in Figure 2.

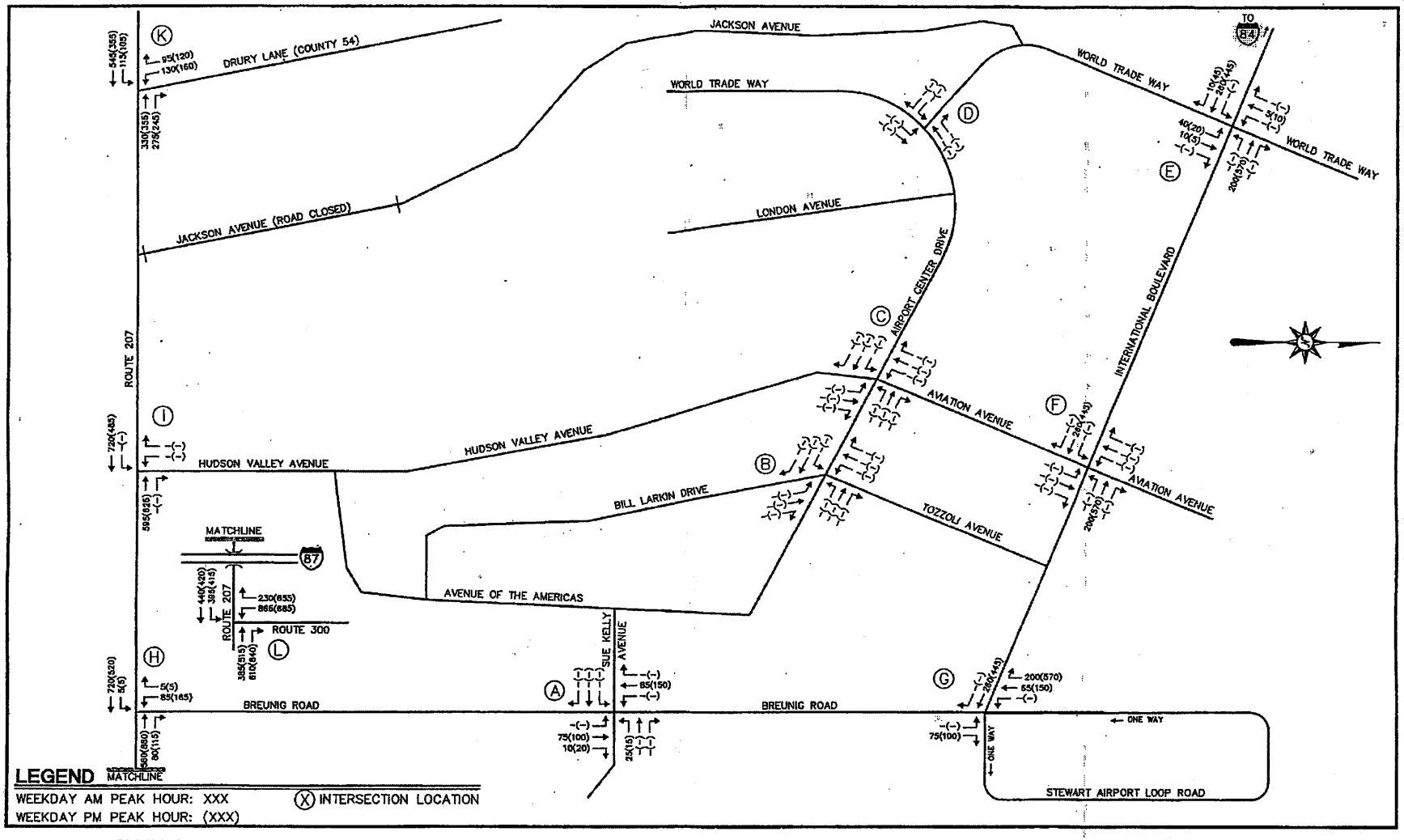
Trip Distribution

The trip distribution utilized in this study was also developed directly from information provided in the SAAI FDR/FEIS. The distribution of traffic through each intersection is contained in the spreadsheet contained in Appendix I. With the construction of the new I-84 interchange on Drury Lane, the majority of the site traffic is anticipated to use the east-west Connector Road to access the site, avoiding the local street system (Route 300, 17K, and 207).

Site Traffic Volumes

Trip generation defines the number of trips oriented to and from a particular land use. Typically, trip generation rates quantify a per unit relationship of a specific land use with the number of vehicles per unit of time. These rates, determined from studies of similar facilities, form the basis for estimating the number of vehicles generated by future development.

Trip generation rates for the proposed re-development were derived from information contained in Trip Generation, 6th edition, published by the Institute of Transportation



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2015 BACKGROUND TRAFFIC VOLUMES

NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR, NEW YORK

SCHEMATIC, NOT TO SCALE

FIGURE 2

Date: Sept. 2002 CAD File: TOC87902 XREF(s): NONE

Engineers (ITE). Specifically the rates associated with the following Land Use Codes (LUC) were used:

- LUC 140, Manufacturing
- LUC 230, Residential Condominium/Townhouse
- LUC 310, Hotel
- LUC 312, Business Hotel
- LUC 540, Junior/Community College
- LUC 710, General Office Building
- LUC 720, Medical Office Building
- LUC 760, Research and Development Center
- LUC 814, Specialty Retail Center
- LUC 832, High Turnover (Sit-Down) Restaurant
- LUC 845, Gasoline/Service Station with Convenience Market

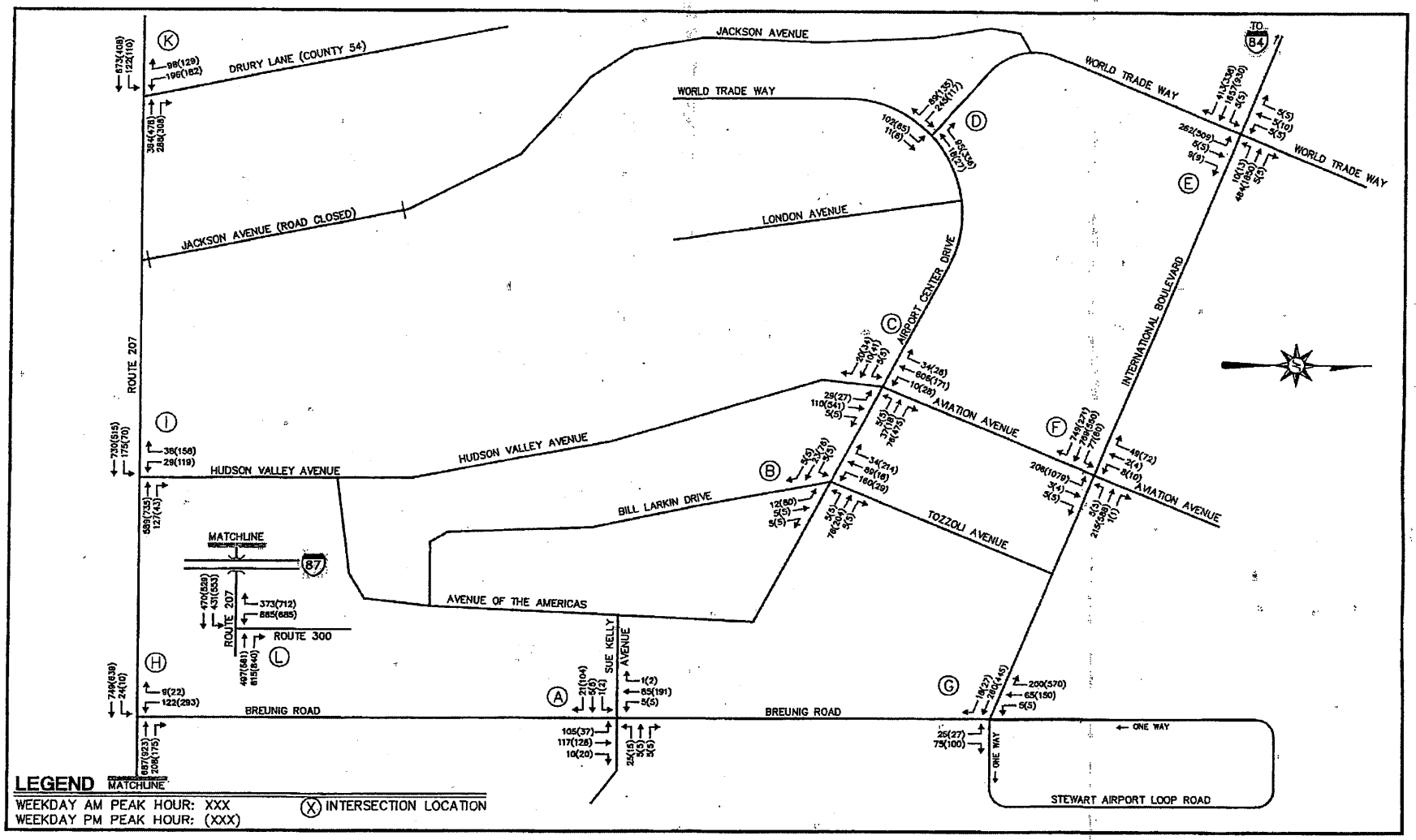
The re-development plan was broken into zones, see Figure A located in Appendix I, and trips generated for each zone. The appropriate trip generation rates for each zone were applied and the resulting total trips generated are summarized in Table A1, also located in Appendix I.

In developments containing multiple land uses, trip generation is often developed for each land use individually, as was the case in this study. This methodology does not take into account that a portion of the trips generated from an individual land use will not be new to the street system but captured internally from another use. Based on data contained in the Trip Generation Handbook, October 1998, published by ITE, it was estimated that 35 percent of the non-office related trips would be captured. Subtracting the captured trips, see Table A1 located in Appendix I, from the trips generated directly from the ITE trip generation rates yielded the new site traffic volumes.

It was estimated that the re-development would generate 2867 new trips (2248 in, 619 out) during the morning peak hour and 3152 new trips (953 in, 2199 out) during the afternoon peak hour. These site traffic volumes were assigned onto the adjacent roadway network, given the established trip distribution. The site traffic volumes applied to each study intersection are contained in the spreadsheet contained in Appendix I.

2015 Full Build Traffic Volumes

The anticipated site traffic volumes were superimposed onto the 2015 background or no build traffic volumes to establish the 2015 full build traffic volumes, as illustrated in Figure 3.



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2015 FULL BUILD TRAFFIC VOLUMES

NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR, NEW YORK
SCHEMATIC, NOT TO SCALE

FIGURE 3

Date: Sept. 2002 CAD File: TDC87902 XREF(s): NONE

PART IV

ROADWAY ADEQUACY

Capacity analyses were performed for the background/no build and full build traffic conditions. The analyses were based on the methodology described in the year 2000, Highway Capacity Manual (HCM), published by the Transportation Research Board (TRB).

Signalized Intersections

Signalized intersections are analyzed in terms of vehicle capacity and motorist delay. Capacity is the maximum rate of vehicle flow through an intersection given typical operating conditions. The number of vehicles traveling through an intersection is divided by the capacity of the intersection to determine an overall volume to capacity ratio (v/c). A v/c value under 1.00 indicates that the number of vehicles traveling through an intersection is less than capacity.

As stated in the HCM, level of service for signalized intersections is defined in terms of control delay. Control delay measures the increase in delay a motorist experiences while encountering a traffic control signal. These factors include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. This delay is averaged per vehicle for a 15-minute analysis period and is associated with the levels of service, which are summarized in Table 1.

Table 1. Level Of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)
A	< 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Level of service A represents the optimum level where most motorists arrive at the subject intersection during the green phase and thus experience virtually no delay. Conversely, level of service F indicates that motorists are delayed over 80 seconds while traveling through the intersection, and can imply a complete breakdown of that location. Level of service D is generally considered the limit of acceptable motorist delay. The following signalized intersections were analyzed as part of this study:

- **Route 207 at Drury Lane**
- **Route 207 at Hudson Valley Avenue**
- **Route 207 at Breunig Road**
- **Route 207 at Route 300 (westerly junction)**
- **International Boulevard at World Trade Way**
- **International Boulevard at Aviation Avenue**
- **International Boulevard at Breunig Road**

Unsignalized Intersections

Unsignalized intersections are generally evaluated in terms of average side street delay, as well as the capacity of the roadway approach. This analysis is based on the random arrival of vehicles and the associated gaps generated by this random arrival within the traffic stream. There is no overall level of service for unsignalized

intersections. The relationship between levels of service and average side street delay are summarized in Table 2.

Table 2. Level Of Service Criteria for Unsignalized Intersections

Level of Service	Delay Range (seconds)
A	< 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

The following unsignalized intersections were analyzed as part of this study:

- **Breunig Road at Sue Kelly Avenue**
- **World Trade Way at Airport Center Drive**
- **Airport Center Drive at Hudson Valley Avenue/Aviation Avenue**
- **Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue**

Intersection Analyses

The NYSDOT Highway Design Manual indicates that correct intersection design practice should strive to provide signalized intersections with design year LOS D or better for each lane group. In addition the volume to capacity ratio (v/c) should be under 0.95. Similar criteria are not provided for unsignalized intersections.

The intersections within the study area were analyzed for both the no build and build conditions. The roadway improvements proposed with NYSTA Contract D211816, the

SAAI FDR/FEIS and the SIA Update are all assumed to be in place for both the background and full build analyses. The results of the no build or background capacity analyses are summarized in Table 3 and analyses in Appendix II. Due to minimal existing site traffic volumes some of the internal site intersections were excluded from this analyses. The remaining intersections are all anticipated to operate at acceptable LOS during both the weekday morning and afternoon study periods.

The results of the full build analyses, summarized in Table 4, indicates that five of the study intersections are anticipated to operate at LOS and volume to capacity ratios that are undesirable. The five intersections include Route 207 at Hudson Valley Avenue, Route 207 at Route 300, International Boulevard/Connector Road at World Trade Way, International Boulevard at Aviation Avenue, and Airport Center Drive at Aviation Avenue. Modifications to the traffic control at the intersection of Airport Center Drive at Hudson Valley Avenue/Aviation Avenue were also proposed.

Potential transportation improvements have been identified for the above intersections and are summarized in the following section. Given these improvements, all of the study intersections are anticipates to operate at acceptable LOS and with acceptable volume to capacity ratios. The results of the full build analysis is summarized in Table 4 and the calculations are provided in Appendix II.

TABLE 3 - Level of Service Summary - 2015 Background/No Build Condition

Intersection	Approach	Lane Group	2015 Background With Improvements			
			AM Peak Hour		PM Peak Hour	
			LOS	v/c	LOS	v/c
Route 207 at Drury Lane:	Route 207 Eastbound:	Left	A	0.34	A	0.31
		Through	A	0.54	A	0.35
	Route 207 Westbound:	Through/Right	A	0.64	A	0.63
	Drury Lane Southbound:	Left	B	0.4	B	0.50
		Right	B	0.24	B	0.33
	Overall Intersection:		A	-	A	-
Route 207 at Breunig Road:	Route 207 Eastbound:	Left/Through	B	0.72	A	0.53
	Route 207 Westbound:	Through	A	0.56	B	0.88
		Right	A	0.06	A	0.11
	Breunig Road Southbound:	Left	B	0.22	C	0.43
		Right	B	0.02	B	0.02
	Overall Intersection:		B	-	B	-
Route 207 at Route 300 ..	Route 207 Eastbound:	Left	C	0.87	C	0.82
		Through	B	0.45	A	0.37
	Route 207 Westbound:	Through	C	0.63	C	0.8
		Right	A	0.51	C	0.87
	Route 300 Southbound:	Left	D	0.93	D	0.83
		Right	B	0.28	C	0.83
	Overall Intersection:		C	-	C	-
Breunig Road at Sue Kelley Avenue:	Sue Kelley Avenue Eastbound:	Left/Right	A	0.01	A	0.01
International Boulevard at Connector Road and World Trade Way	Connector Road Eastbound:	Left	A	0.01	A	0.01
		Through/Right	A	0.12	A	0.24
	International Boulevard Westbound:	Left	A	0.01	A	0.01
		Through/Right	A	0.09	A	0.29
	World Trade Way Northbound:	Left/Through/Right	C	0.27	C	0.04
	World Trade Way Southbound:	Left/Through/Righ	C	0.07	C	0.04
	Overall Intersection:		A	-	A	-
International Boulevard at Aviation Avenue	International Boulevard Eastbound:	Left	A	0.01	B	0.02
		Through/Right	A	0.12	B	0.30
	International Boulevard Westbound:	Left	A	0.01	B	0.02
		Through/Right	A	0.10	B	0.41
	Aviation Avenue Northbound:	Left/Through/Right	C	0.05	B	0.02
	Aviation Avenue Southbound:	Left/Through/Right	C	0.05	B	0.02
	Overall Intersection:		A	-	B	-
International Boulevard at Breunig Road and Loop Road	International Boulevard Eastbound:	Through	B	0.47	C	0.80
		Right	A	0.01	B	0.01
	Breunig Road Northbound:	Left/Right	A	0.11	A	0.15
	Breunig Road Southbound:	Left/Through	A	0.08	A	0.19
		Right	A	0.28	C	0.80
	Overall Intersection:		B	-	B	-

* = not available
N/A = not applicable
[1] = Cannot be analyzed without improvements. Currently, the Bill Larkin Drive approach is closed and traffic control (yield sign) is provided on Tozzoli Avenue only.

TABLE 4 - Level of Service Summary - 2015 Full Build Condition

Intersection	Approach	Lane Group	2015 Full Build Without Improvements				2015 Full Build With Improvements			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c
Route 207 at Drury Lane:	Route 207 Eastbound:	Left	A	0.39	A	0.44	-	-	-	-
		Through	A	0.67	A	0.41	-	-	-	-
	Route 207 Westbound:	Through/Right	A	0.69	B	0.84	-	-	-	-
	Drury Lane Southbound:	Left	C	0.61	B	0.57	-	-	-	-
		Right	B	0.25	B	0.36	-	-	-	-
	Overall Intersection:		B	-	B	-	-	-	-	-
Route 207 at Hudson Valley Avenue:	Route 207 Eastbound:	Left	A	0.60	A	0.26	-	-	-	-
		Through/Right	A	0.79	A	0.57	-	-	-	-
	Route 207 Westbound:	Left/Through/Right	B	0.87	B	0.87	-	-	-	-
	Hudson Valley Avenue Southbound:	Left/Right	B	0.22	C	0.75	-	-	-	-
	Overall Intersection:		B	-	B	-	-	-	-	-
Route 207 at Breunig Road:	Route 207 Eastbound:	Left/Through	B	0.82	B	0.66	-	-	-	-
	Route 207 Westbound:	Through	B	0.68	C	0.92	-	-	-	-
		Right	A	0.21	A	0.18	-	-	-	-
	Breunig Road Southbound:	Left	C	0.32	C	0.77	-	-	-	-
		Right	B	0.03	B	0.06	-	-	-	-
	Overall Intersection:		B	-	C	-	-	-	-	-
Route 207 at Route 300	Route 207 Eastbound:	Left	F	1.08	F	1.14	D	0.94	E	0.96
		Through	B	0.48	A	0.47	B	0.46	A	0.45
	Route 207 Westbound:	Through	D	0.81	D	0.87	E	0.94	E	0.94
		Right	A	0.72	C	0.87	B	0.55	D	0.92
	Route 300 Southbound:	Left	D	0.93	D	0.93	D	0.94	E	0.93
		Right	B	0.52	D	0.96	B	0.42	C	0.86
	Overall Intersection:		C	-	D	-	D	-	D	-
Breunig Road at Sue Kelley Avenue:	Sue Kelley Avenue Eastbound:	Left/Right	A	0.03	B	0.14	-	-	-	-
International Boulevard at Connector Road and World Trade Way	Connector Road Eastbound:	Left	A	0.01	A	0.08	A	0.01	A	0.08
		Through	-	-	-	-	B	0.82	B	0.50
		Right	-	-	-	-	A	0.36	A	0.29
		Through/Right	B	0.94	B	0.71	-	-	-	-
	International Boulevard Westbound:	Left	A	0.13	A	0.08	A	0.13	A	0.04
		Through/Right	A	0.20	B	0.94	A	0.23	B	0.94
	World Trade Way Northbound:	Left	-	-	-	-	D	0.71	D	0.82
		Left/Through/Right	F	1.49	F	1.53	D	0.73	D	0.80
	World Trade Way Southbound:	Left/Through/Righ	C	0.09	C	0.05	D	0.19	D	0.32
	Overall Intersection:		D	-	D	-	B	-	C	-
International Boulevard at Aviation Avenue	International Boulevard Eastbound:	Left	B	0.11	B	0.31	A	0.12	B	0.32
		Through/Right	B	0.73	B	0.58	B	0.80	C	0.60
	International Boulevard Westbound:	Left	A	0.06	B	0.03	A	0.07	B	0.04
		Through/Right	A	0.10	B	0.42	A	0.11	B	0.43
	Aviation Avenue Northbound:	Left	-	-	-	-	C	0.31	D	0.93
		Left/Through/Right	D	0.82	F	2.10	C	0.32	D	0.89
	Aviation Avenue Southbound:	Left/Through/Right	C	0.18	B	0.14	D	0.46	D	0.60
	Overall Intersection:		B	-	F	-	B	-	C	-
International Boulevard at Breunig Road and Loop Road	International Boulevard Eastbound:	Through	B	0.47	C	0.80	-	-	-	-
		Right	B	0.01	B	0.06	-	-	-	-
	Breunig Road Northbound:	Left/Right	A	0.11	A	0.19	-	-	-	-
	Breunig Road Southbound:	Left/Through	A	0.08	A	0.19	-	-	-	-
		Right	A	0.28	C	0.80	-	-	-	-
	Overall Intersection:		B	-	B	-	-	-	-	-
World Trade Way at Airport Center Drive:	World Tade Way Southbound:	Left/Right	C	0.53	B	0.42	-	-	-	-
Hudson Valley Avenue at Airport Center Drive and Aviation Avenue	Airport Center Drive Eastbound:	Left/Through/Right	-	-	-	-	C	0.12	C	0.25
	Airport Center Drive Westbound:	Left/Through/Right	-	-	-	-	C	0.18	C	0.11
	Hudson Valley Avenue Northbound:	Left/Through/Right	C	0.47	F	1.62	-	-	-	-
	Hudson Valley Avenue Southbound:	Left/Through/Right	E	0.95	F	*	-	-	-	-
Airport Center Drive at Bill Larkin Drive and Tozzoli Avenue	Bill Larkin Drive Northbound:	Left/Through/Right	N/A[1]	N/A[1]	N/A[1]	N/A[1]	B	0.03	C	0.26
	Tozzoli Avenue Southbound:	Left/Through/Right	N/A[1]	N/A[1]	N/A[1]	N/A[1]	B	0.38	B	0.37

* = not available
N/A = not applicable
[1] = Cannot be analyzed without improvements. Currently, the Bill Larkin Drive approach is closed and traffic control (yield sign) is provided on Tozzoli Avenue only.

Proposed Transportation Improvements

Transportation improvements proposed to accommodate the traffic generated by the New York International Plaza re-development include the following:

- **Route 207 at Route 300 (westerly junction)** – Increase traffic signal cycle lengths for both the morning and afternoon peak hours and modify signal timings.

- **International Boulevard/Connector Road at World Trade Way** – Widen along the southerly side of the east-west Connector Road to provide an exclusive eastbound right turn lane. Re-stripe the northbound Airport Center Drive approach to provide an exclusive left turn lane and a shared left/through/right turn lane. Widen the northerly side of the Connector Road to provide the proper acceptance width for the dual left turn movement.

- **International Boulevard at Aviation Avenue (formerly 4th Street)** – Re-stripe the Aviation Avenue northbound approach to provide a left turn lane and a shared left/through/right turn lane. Widen the northerly side of the International Boulevard west of Aviation Avenue for the dual left turn movement.

- **Airport Center Drive (formerly D Street) at Aviation Avenue (formerly 4th Street)/Hudson Valley Avenue (formerly Aviation Avenue)** – Reconstruct the northeasterly corner of the intersection to provide a channelized right turn lane. Modify the traffic control by removing the existing stop signs from the Hudson Valley Avenue and Aviation Avenue approaches and installing stop signs on the World Trade Way approaches.

- **Airport Center Drive at Bill Larkin Drive/Tozzoli Avenue** – Modify the traffic control to provide stop signs on both the Bill Larkin Drive and Tozzoli Avenue approaches.

Estimated Development Thresholds

Since this project, like many large developments, will be built in phases, development thresholds associated with the anticipated improvements summarized in the previous section were estimated. The estimation of the development thresholds, the amount of proposed re-development that can be built prior to the need to implement roadway improvements, was determined based on the base roadway conditions discussed in Part II of this study, the 2015 background/no build traffic volumes, trip distribution and trip generation methodologies discussed in Part III of this study, a preliminary development plan provided by First Columbia, and HCM methodologies for analyses.

It was estimated that minimal improvements will be necessary at the start of the re-development of New York International Plaza. Specifically these improvements include the traffic control modifications at the Airport Center Drive intersections with Aviation Avenue/Hudson Valley Avenue and Bill Larkin Drive/Tozzoli Avenue (providing/relocating stop signs). The remaining improvements are anticipated to be needed after about 70 percent of the re-development is constructed. The following is portion of development that can be completed prior to implementation of the listed improvement:

- After about **70 percent (or about 1,750,000 square feet)** of re-development completion the improvements associated with the double left turn movement at the World Trade Way at Connector Road/International Boulevard intersection are anticipated to be needed.
- After about **80 percent (or about 2,000,000 square feet)** of re-development completion the improvements associated with the double left turn movement at the International Boulevard at Aviation Avenue intersection are anticipated to be needed.

- After about **85 percent (or about 2,125,000 square feet)** of re-development completion the improvements associated with exclusive right turn lane at the eastbound Connector Road approach at the World Trade Way intersection with the Connector Road and International Boulevard are anticipated to be needed.

- And after about **90 percent (or about 2,325,000 square feet)** of re-development completion the channelized right turn lane improvement at the Airport Center Drive at Aviation Avenue and Hudson Valley Avenue is anticipated to be needed.

PART V

RECOMMENDATIONS AND CONCLUSIONS

This study investigated the traffic impacts associated with the proposed re-development of New York International Plaza during the weekday morning and afternoon commuter peak traffic periods. The re-development is anticipated to generated about 2900 and 3150 new trips during the weekday morning and afternoon commuter peak hours, respectively. Capacity analyses was performed to evaluate roadway conditions at the time of full build out of this re-development plan at key intersections along Route 207, Breunig Road, International Boulevard and World Trade Way. In order to provide/maintain acceptable intersection operations after the re-development of New York International Plaza the following potential improvements were identified:

- **Route 207 at Route 300 (westerly junction)** – Increase traffic signal cycle lengths for both the morning and afternoon peak hours and modify signal timings.

- **International Boulevard/Connector Road at World Trade Way** – Widen the eastbound Connector Road approach to provide an exclusive right turn lane. Re-stripe the northbound World Trade Way approach to provide an exclusive left turn lane and a shared left/through/right turn lane and widen the northelry side of the Connector Road to provide the proper acceptance width for the dual left turn movement.

- **International Boulevard at Aviation Avenue (formerly 4th Street)** – Re-stripe the Aviation Avenue northbound approach to provide a left turn lane and a shared left/through/right turn lane. Widen the northerly side of International Boulevard to accept the dual left turn movement from Aviation Avenue.

- **Airport Center Drive (formerly D Street) at Aviation Avenue (formerly "4th Street)/Hudson Valley Avenue (formerly Avenue of the Americas)** – Reconstruct the northeasterly corner of the intersection to provide a channelized right turn lane. Modify the traffic control by removing the existing stop signs from

the Hudson Valley Avenue and Aviation Avenue approaches and installing stop signs on the Airport Center Drive approaches.

- **Airport Center Drive at Bill Larkin Drive/Tozzoli Avneue** – Modify the traffic control to provide stop signs on both the Bill Larkin Drive and Tozzoli Avenue approaches.

These improvements are an estimate of likely improvements needed at the time of full build out of the New York International Plaza re-development plan. Since many large development plans are constructed in phases, it is probable that not all of these improvements will be needed in the early stages of re-development.

It was determined, based on a preliminary development phasing plan provided by First Columbia, that minimal improvements will be necessary at the start of the re-development of New York International Plaza. Specifically these improvements include the traffic control modifications at the Airport Center Drive intersections with Aviation Avenue/Hudson Valley Avenue and Bill Larkin Drive/Tozzoli Avenue (providing/relocating stop signs). The remaining roadway improvements are anticipated to be needed after about 70 percent of the re-development is constructed. The following is a list of the portion of development completion that can be constructed prior to installation of the listed improvement:

- After about **70 percent (or 1,735,000 square feet)** of re-development completion the improvements associated with the double left turn movement at the World Trade Way at Connector Road/International Boulevard intersection are anticipated to be needed.

- After about **80 percent (or 2,010,000 square feet)** of re-development completion the improvements associated with the double left turn movement at

the International Boulevard at Aviation Avenue intersection are anticipated to be needed.

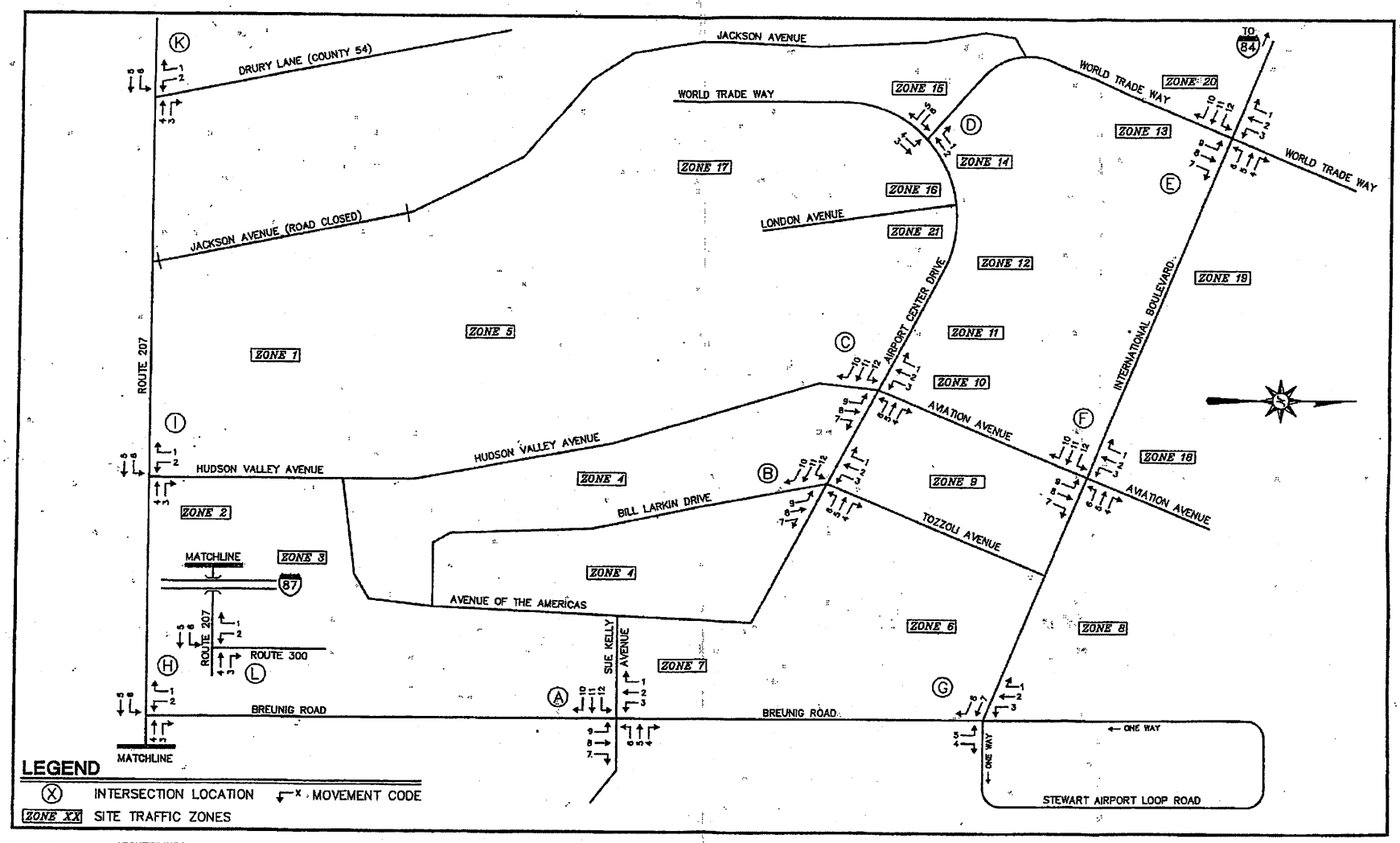
- After about **85 percent (or 2,120,000 square feet)** of re-development completion the improvements associated with exclusive right turn lane at the eastbound Connector Road approach at the World Trade Way intersection with the Connector Road and International Boulevard are anticipated to be needed.

- And after about **90 percent (or 2,315,000 square feet)** of re-development completion the channelized right turn lane improvement at the Airport Center Drive at Aviation Avenue and Hudson Valley Avenue are anticipated to be needed.

It is recommended, as the project reaches these thresholds, that the need for the implementation of these or similar roadway improvements be monitored.

APPENDIX I

TRAFFIC VOLUMES



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TRAFFIC ZONES AND MOVEMENT CODES

NEW YORK INTERNATIONAL PLAZA
TOWN OF NEW WINDSOR, NEW YORK
SCHEMATIC, NOT TO SCALE

FIGURE A

Date: Sept. 2002 CAD File: TDC87802 XREF(s): NONE

TABLE A1 - TRIP GENERATION SUMMARY - NYIP

				Total Trips						Captured Trips						New Trips					
				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Zone	Use	Size (SF)	"Use"	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1	Production/ Warehouse	220,000	O	125	35	160	85	80	165							125	35	160	85	80	165
2	Medical Office	50,000	N	100	25	125	50	135	185	35	9	44	18	47	65	65	16	81	33	88	120
3	Office	225,000	O	310	45	355	55	275	330							310	45	355	55	275	330
4	Office	500,000	O	590	80	670	110	530	640							590	80	670	110	530	640
5	Research and Development	80,000	O	95	20	115	15	95	110							95	20	115	15	95	110
6	Office	200,000	O	285	40	325	50	255	305							285	40	325	50	255	305
7	Retail	50,000	N	20	15	35	55	75	130	7	5	12	19	26	46	13	10	23	36	49	85
8	Convention Center and Hotel	295,000	N	120	85	205	100	100	200	42	30	72	35	35	70	78	55	133	65	65	130
9	Education	100,000	N	145	35	180	75	90	165	51	12	63	26	32	58	94	23	117	49	59	107
10	Education	60,000	N	85	20	105	45	55	100	30	7	37	16	19	35	55	13	68	29	36	65
11	Restaurant	8,000	N	40	35	75	50	35	85	14	12	26	18	12	30	26	23	49	33	23	55
12	Hotel	71,500	N	40	25	65	40	30	70	14	9	23	14	11	25	26	16	42	26	20	46
13	Hotel	57,200	N	30	20	50	35	20	55	11	7	18	12	7	19	20	13	33	23	13	36
14	Office	30,000	O	60	10	70	20	95	115							60	10	70	20	95	115
15	Hotel	71,500	N	40	25	65	40	30	70	14	9	23	14	11	25	26	16	42	26	20	46
	Restaurant	20,000	N	95	90	185	130	85	215	33	32	65	46	30	75	62	59	120	85	55	140
16	Office	20,000	N	45	5	50	15	85	100							45	5	50	15	85	100
17	Corporate Housing	233,750	N	20	95	115	95	45	140	7	33	40	33	16	49	13	62	75	62	29	91
18	Retail	40,000	N	20	10	30	45	60	105	7	4	11	16	21	37	13	7	20	29	39	68
19	Office	30,000	O	60	10	70	20	95	115							60	10	70	20	95	115
	Hotel	71,500	N	40	25	65	40	30	70	14	9	23	14	11	25	26	16	42	26	20	46
20	Service Station	2,000	N	40	40	80	50	55	105	14	14	28	18	19	37	26	26	52	33	36	68
21	Office	80,000	O	135	20	155	30	140	170							135	20	155	30	140	170
	Total	2,515,450		2540	810	3350	1250	2495	3745	292	191	483	298	296	593	2248	619	2867	953	2199	3152
	"Office" Trips		O	1660	260	1920	385	1565	1950												
	+ "Non-Office" Trips		N	880	550	1430	865	930	1795												
	Total Trips			2540	810	3350	1250	2495	3745												
	- Captured Trips (35% of Non-Office trips)			292	191	483	298	296	593												
	Total New Trips			**2248**	**619**	**2867**	**953**	**2199**	**3152**												
Use >	"O" = Office Type Trips																				
	"N" = Non- Office Type Trips																				

Table A2 - New York International Plaza Trip Distribution and Assignment

				Breuning Road at Sue Kelly Avenue												World Trade Way at Bill Larkin Drive/ Tozzoli Avenue												Airport Center Drive at Hudson Valley Avenue/ Aviation Avenue											
Zone	Peak Hour	Direction	Vehicles	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
Percent Distributions:																																							
1	AM	IN	125																										69										
		OUT	85																																69				
	PM	IN	85																										69										
		OUT	80																																69				
2	AM	IN	65																										49										
		OUT	16																																49				
	PM	IN	33																										49										
		OUT	88																																49				
3	AM	IN	310															25											44										
		OUT	45																	25											25				44					
	PM	IN	55															25											44										
		OUT	275																	25											25				44					
4	AM	IN	590									5					15	14											55										
		OUT	80										5							14					15						29				55					
	PM	IN	110									5					15	14											55										
		OUT	530										5							14					15						29				55					
5	AM	IN	95																										25										
		OUT	20																																25				
	PM	IN	15																										25										
		OUT	95																																25				
6	AM	IN	285								6	10																											
		OUT	40		6								10			84															84									
	PM	IN	50								6	10																											
		OUT	255		6								10			84															84									
7	AM	IN	13	5								10														79				79									
		OUT	10										10		5					79											79								
	PM	IN	36	5								10														79				79									
		OUT	49										10		5					79											79								
8	AM	IN	78								13																								3				
		OUT	55		13																								3										
	PM	IN	65								13																								3				
		OUT	65		13																								3										
9	AM	IN	94									10								10															6				
		OUT	23										10													10			6										
	PM	IN	49									10								10															6				
		OUT	59										10													10			6										
10	AM	IN	55									10								10								42				10			6				
		OUT	13										10													10										6	6	10	
	PM	IN	29									10								10								42				10			6				
		OUT	36										10													10										6	6	10	
11	AM	IN	26									10								10								42				10			6				
		OUT	23										10													10										6	10	21	
	PM	IN	33									10								10								42				10			6				
		OUT	23										10													10										6	10	21	
12	AM	IN	26									10								10												10			6				
		OUT	16										10													10										6	10		
	PM	IN	26									10								10												10			6				
		OUT	20										10													10										6	10		
13	AM	IN	20									10								10												10			6				
		OUT	13										10													10										6	10		
	PM	IN	23									10								10												10			6				
		OUT	13										10													10										6	10		
14	AM	IN	60									10								10												10			6				
		OUT	10										10													10										6	10		
	PM	IN	20									10								10												10			6				
		OUT	95										10													10										6	10		
15	AM	IN	88								10																								6				
		OUT	75		10																															6			
	PM	IN	111								10																								6				
		OUT	75		10																															6			

Table A2 - New York International Plaza Trip Distribution and Assignment

				Breuning Road at Sue Kelly Avenue												World Trade Way at Bill Larkin Drive/ Tozzoli Avenue												Airport Center Drive at Hudson Valley Avenue/ Aviation Avenue											
Zone	Peak Hour	Direction	Vehicles	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
16	AM	IN	45									10								10												10				6			
		OUT	5										10													10											6	10	
	PM	IN	75									10								10												10				6			
		OUT	86										10													10											6	10	
17	AM	IN	13																																	16			
		OUT	62																																		16		
	PM	IN	62																																	16			
		OUT	29																																		16		
18	AM	IN	13								5																								6				
		OUT	7		5																								6										
	PM	IN	29								5																								6				
		OUT	39		5																								6										
19	AM	IN	86								5																												
		OUT	28		5																																		
	PM	IN	46								5																												
		OUT	115		5																																		
20	AM	IN	26								5																												
		OUT	26		5																																		
	PM	IN	33								5																												
		OUT	86		5																																		
21	AM	IN	135									10								10												10				6			
		OUT	20										10													10											6	10	
	PM	IN	30									10								10												10				6			
		OUT	140										10													10											6	10	
New Site Traffic Volumes:																																							
1	AM	IN	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	0	0	0	0	0	0	0	0	0	0
		OUT	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0
	PM	IN	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	0	0	0	0	0	0	0	0	0	0
		OUT	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55	0	0	0	0
2	AM	IN	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0
		OUT	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0
	PM	IN	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0
		OUT	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	0	0	0	0
3	AM	IN	310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78	0	0	0	0	0	0	0	0	0	0	138	0	0	0	0	0	0	0	0	0	0
		OUT	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	11	0	0	0	20	0	0	0	0
	PM	IN	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0
		OUT	275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	69	0	0	0	0	0	0	0	0	0	0	69	0	0	0	121	0	0	0	0
4	AM	IN	590	0	0	0	0	0	0	0	0	30	0	0	0	0	89	83	0	0	0	0	0	0	0	0	0	0	325	0	0	0	0	0	0	0	0	0	0
		OUT	80	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	11	0	0	0	12	0	0	0	0	0	0	23	0	0	0	44	0	0	0	0
	PM	IN	110	0	0	0	0	0	0	0	0	6	0	0	0	0	17	16	0	0	0	0	0	0	0	0	0	0	61	0	0	0	0	0	0	0	0	0	0
		OUT	530	0	0	0	0	0	0	0	0	0	27	0	0	0	0	0	0	74	0	0	0	80	0	0	0	0	0	0	154	0	0	0	292	0	0	0	0
5	AM	IN	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0
		OUT	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0
	PM	IN	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
		OUT	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0
6	AM	IN	285	0	0	0	0	0	0	0	17	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	40	0	2	0	0	0	0	0	0	0	4	0	0	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0	0	0	0	0
	PM	IN	50	0	0	0	0	0	0	0	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	255	0	15	0	0	0	0	0	0	0	26	0	0	214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	214	0	0	0	0	0	0	0	0
7	AM	IN	13	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	10	0	0	0	0	0	0	0	0	0
		OUT	10	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0
	PM	IN	36	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	0	28	0	0	0	0	0	0	0	0	0
		OUT	49	0	0	0	0	0	0	0	0	0	5	0	2	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0
8	AM	IN	78	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
		OUT	55	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	PM	IN	65	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
		OUT	65	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
9	AM	IN	94	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0
		OUT	23	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0
	PM	IN	49	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
		OUT	59	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	4	0	0	0	0	0	0	0	0	0	0

Table A2 - New York International Plaza Trip Distribution and Assignment

				Breuning Road at Sue Kelly Avenue												World Trade Way at Bill Larkin Drive/ Tozzoli Avenue												Airport Center Drive at Hudson Valley Avenue/ Aviation Avenue											
Zone	Peak Hour	Direction	Vehicles	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
10	AM	IN	55	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	23	0	0	0	6	0	0	0	3	0	0	0
		OUT	13	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0
	PM	IN	29	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	12	0	0	0	3	0	0	0	2	0	0	0
		OUT	36	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	2	4	0
11	AM	IN	26	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	11	0	0	0	3	0	0	0	2	0	0	0
		OUT	23	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	5
	PM	IN	33	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	14	0	0	0	3	0	0	0	2	0	0	0
		OUT	23	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	2	5
12	AM	IN	26	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	0
		OUT	16	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	2	0
	PM	IN	26	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	0
		OUT	20	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	2	0
13	AM	IN	20	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0
		OUT	13	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0
	PM	IN	23	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0
		OUT	13	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0
14	AM	IN	60	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	4	0	0	0
		OUT	10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0
	PM	IN	20	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0
		OUT	95	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	6	10	0
15	AM	IN	88	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
		OUT	75	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
	PM	IN	111	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
		OUT	75	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
16	AM	IN	45	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0	0	0
		OUT	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
	PM	IN	15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0
		OUT	65	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	5	9	0
17	AM	IN	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
		OUT	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0
	PM	IN	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0
		OUT	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
18	AM	IN	13	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
		OUT	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	29	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
		OUT	39	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
19	AM	IN	86	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	26	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	45	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	115	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	AM	IN	26	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	26	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	33	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	36	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	AM	IN	135	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	8	0	0	0
		OUT	20	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	2	0
	PM	IN	30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	0
		OUT	140	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	8	14	0

Table A2 - New York International Plaza Trip Distribution and Assignment

Zone	Peak Hour	Direction	Vehicles	Breuning Road at Sue Kelly Avenue												World Trade Way at Bill Larkin Drive/ Tozzoli Avenue												Airport Center Drive at Hudson Valley Avenue/ Aviation Avenue											
				A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
New Site Traffic Volumes:																																							
	AM	IN		1	0	0	0	0	0	0	42	105	0	0	0	0	88	160	0	46	0	0	0	0	0	10	0	34	603	10	0	37	0	0	9	29	0	0	0
		OUT		0	20	0	0	0	0	0	0	0	21	0	1	34	0	0	0	30	0	0	0	12	0	12	0	0	3	0	76	0	0	0	101	0	20	10	5
		Total		1	20	0	0	0	0	0	42	105	21	0	1	34	88	160	0	76	0	0	0	12	0	23	0	34	606	10	76	37	0	0	110	29	20	10	5
	PM	IN		2	0	0	0	0	0	0	28	37	0	0	0	0	17	29	0	23	0	0	0	0	0	28	0	28	163	28	0	18	0	0	7	27	0	0	0
		OUT		0	41	0	0	0	0	0	0	0	104	0	2	214	0	0	0	182	0	0	0	80	0	47	0	0	8	0	475	0	0	0	535	0	34	41	5
		Total		2	41	0	0	0	0	0	28	37	104	0	2	214	17	29	0	204	0	0	0	80	0	75	0	28	171	28	475	18	0	0	541	27	34	41	5
2015 Background Volumes:																																							
	AM				55				25	10	75																												
	PM				150				15	20	100																												
2015 Full Build Volumes:																																							
	AM			1	55	0	0	0	25	10	117	105	21	0	1	34	88	160	0	76	0	0	0	12	0	23	0	34	606	10	76	37	0	0	110	29	20	10	5
	PM			2	191	0	0	0	15	20	128	37	104	0	2	214	17	29	0	204	0	0	0	80	0	75	0	28	171	28	475	18	0	0	541	27	34	41	5

Table A2 - New York

Zone	Peak Hour	Direction	Airport Center Drive at World Trade Way						International Boulevard at World Trade Way												International Boulevard at Aviation Avenue												International Boulevard at Breunig Road/ Loop Road						
			D1	D2	D3	D4	D5	D6	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	G1	G2	G3	G4	G5	G6	G7
Percent Distributions:																																							
1	AM	IN																	69											69									
		OUT											69																69										
	PM	IN																	69											69									
		OUT											69																69										
2	AM	IN																	49											49									
		OUT											49																49										
	PM	IN																	49											49									
		OUT											49																49										
3	AM	IN																	69											44	25								
		OUT											69																69										
	PM	IN																	69											44	25								
		OUT											69																69										
4	AM	IN																	84											55	29								
		OUT											84																84										
	PM	IN																	84											55	29								
		OUT											84																84										
5	AM	IN																44	25											25									
		OUT											25				44												25										
	PM	IN																44	25											25									
		OUT											25				44												25										
6	AM	IN																	84												84								
		OUT											84																84										
	PM	IN																	84												84								
		OUT											84																84										
7	AM	IN																	84											79	5							5	
		OUT											84												5				79								5		
	PM	IN																	84											79	5							5	
		OUT											84												5				79								5		
8	AM	IN																	84									3				84					13		
		OUT											84								84	3	13															13	
	PM	IN																	84									3				84					13		
		OUT											84								84	3	13															13	
9	AM	IN																	84											84									
		OUT											84																84										
	PM	IN																	84											84									
		OUT											84																84										
10	AM	IN																	84											84									
		OUT	42										42				42												42										
	PM	IN																	84											84									
		OUT	42										42				42												42										
11	AM	IN		42														42	42											42									
		OUT	63										21				63												21										
	PM	IN		42														42	42											42									
		OUT	63										21				63												21										
12	AM	IN						84										84																					
		OUT	84														84																						
	PM	IN						84										84																					
		OUT	84														84																						
13	AM	IN						84										84																					
		OUT	84														84																						
	PM	IN						84										84																					
		OUT	84														84																						
14	AM	IN						84										84																					
		OUT	84														84																						
	PM	IN						84										84																					
		OUT	84														84																						
15	AM	IN		6			94							10				84							10												10		
		OUT			6	94									10		84														10							10	
	PM	IN		6			94							10				84							10												10		
		OUT			6	94									10		84														10							10	

Table A2 - New York

Zone	Peak Hour	Direction	Airport Center Drive at World Trade Way						International Boulevard at World Trade Way											
			D1	D2	D3	D4	D5	D6	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
16	AM	IN						84										84		
		OUT	84														84			
	PM	IN						84										84		
		OUT	84														84			
17	AM	IN		11			50	34										84		
		OUT	34		11	50											84			
	PM	IN		11			50	34										84		
		OUT	34		11	50											84			
18	AM	IN																	89	
		OUT											89							
	PM	IN																	89	
		OUT											89							
19	AM	IN																	95	
		OUT											95							
	PM	IN																	95	
		OUT											95							
20	AM	IN												5				95		
		OUT													5		95			
	PM	IN												5				95		
		OUT													5		95			
21	AM	IN						84										84		
		OUT	84														84			
	PM	IN						84										84		
		OUT	84														84			
New Site Traffic Volumes:																				
1	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	0
		OUT	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	0
		OUT	0	0	0	0	0	0	0	0	0	0	55	0	0	0	0	0	0	0
2	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0
		OUT	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0
		OUT	0	0	0	0	0	0	0	0	0	0	43	0	0	0	0	0	0	0
3	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	214	0
		OUT	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0
		OUT	0	0	0	0	0	0	0	0	0	0	190	0	0	0	0	0	0	0
4	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	496	0
		OUT	0	0	0	0	0	0	0	0	0	0	57	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	0
		OUT	0	0	0	0	0	0	0	0	0	0	445	0	0	0	0	0	0	0
5	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	24	0
		OUT	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	4	0
		OUT	0	0	0	0	0	0	0	0	0	0	24	0	0	0	42	0	0	0
6	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	239	0
		OUT	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0
		OUT	0	0	0	0	0	0	0	0	0	0	214	0	0	0	0	0	0	0
7	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
		OUT	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0
		OUT	0	0	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0	0
8	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	0
		OUT	0	0	0	0	0	0	0	0	0	0	46	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55	0
		OUT	0	0	0	0	0	0	0	0	0	0	55	0	0	0	0	0	0	0
9	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0
		OUT	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0
		OUT	0	0	0	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0

Zone	Peak Hour	Direction	International Boulevard at Aviation Avenue												International Boulevard at Breunig Road/ Loop Road						
			F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	G1	G2	G3	G4	G5	G6	G7
16	AM	IN																			
		OUT																			
	PM	IN																			
		OUT																			
17	AM	IN																			
		OUT																			
	PM	IN																			
		OUT																			
18	AM	IN				5				6				89					5		
		OUT	45	8	5															5	
	PM	IN				5				6				89					5		
		OUT	45	8	5															5	
19	AM	IN					5												5		
		OUT												5						5	
	PM	IN					5												5		
		OUT												5						5	
20	AM	IN					5												5		
		OUT												5						5	
	PM	IN					5												5		
		OUT												5						5	
21	AM	IN																			
		OUT																			
	PM	IN																			
		OUT																			
New Site Traffic Volumes:																					
1	AM	IN	0	0	0	0	0	0	0	0	0	86	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	59	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	55	0	0	0	0	0	0	0	0	0	0
2	AM	IN	0	0	0	0	0	0	0	0	0	82	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	43	0	0	0	0	0	0	0	0	0	0
3	AM	IN	0	0	0	0	0	0	0	0	0	136	78	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	24	14	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	190	0	0	0	0	0	0	0	0	0	0
4	AM	IN	0	0	0	0	0	0	0	0	0	325	171	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	57	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	61	32	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	445	0	0	0	0	0	0	0	0	0	0
5	AM	IN	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	24	0	0	0	0	0	5	0	0	0	0
6	AM	IN	0	0	0	0	0	0	0	0	0	239	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	34	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	214	0	0	0	0	0	0	0	0	0	0
7	AM	IN	0	0	0	0	0	0	0	0	0	10	1	0	0	0	0	0	0	1	0
		OUT	0	0	0	0	1	0	0	9	8	0	0	0	0	0	0	0	1	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	28	2	0	0	0	0	0	0	2	0
		OUT	0	0	0	0	2	0	0	0	39	0	0	0	0	0	0	0	2	0	0
8	AM	IN	0	0	0	0	0	0	0	2	0	0	0	66	0	0	0	0	10	0	0
		OUT	45	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
	PM	IN	0	0	0	0	0	0	0	2	0	0	0	55	0	0	0	0	8	0	0
		OUT	55	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
9	AM	IN	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0	0	0

Table A2 - New York

			Airport Center Drive at World Trade Way					
Zone	Peak Hour	Direction	D1	D2	D3	D4	D5	D6
10	AM	IN	0	0	0	0	0	0
		OUT	5	0	0	0	0	0
	PM	IN	0	0	0	0	0	0
		OUT	15	0	0	0	0	0
11	AM	IN	0	11	0	0	0	0
		OUT	14	0	0	0	0	0
	PM	IN	0	14	0	0	0	0
		OUT	14	0	0	0	0	0
12	AM	IN	0	0	0	0	0	22
		OUT	13	0	0	0	0	0
	PM	IN	0	0	0	0	0	22
		OUT	17	0	0	0	0	0
13	AM	IN	0	0	0	0	0	17
		OUT	11	0	0	0	0	0
	PM	IN	0	0	0	0	0	19
		OUT	11	0	0	0	0	0
14	AM	IN	0	0	0	0	0	50
		OUT	8	0	0	0	0	0
	PM	IN	0	0	0	0	0	17
		OUT	80	0	0	0	0	0
15	AM	IN	0	5	0	0	83	0
		OUT	0	0	5	71	0	0
	PM	IN	0	7	0	0	104	0
		OUT	0	0	5	71	0	0
16	AM	IN	0	0	0	0	0	38
		OUT	4	0	0	0	0	0
	PM	IN	0	0	0	0	0	13
		OUT	71	0	0	0	0	0
17	AM	IN	0	1	0	0	7	4
		OUT	21	0	7	31	0	0
	PM	IN	0	7	0	0	31	21
		OUT	10	0	3	15	0	0
18	AM	IN	0	0	0	0	0	0
		OUT	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0
		OUT	0	0	0	0	0	0
19	AM	IN	0	0	0	0	0	0
		OUT	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0
		OUT	0	0	0	0	0	0
20	AM	IN	0	0	0	0	0	0
		OUT	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0
		OUT	0	0	0	0	0	0
21	AM	IN	0	0	0	0	0	113
		OUT	17	0	0	0	0	0
	PM	IN	0	0	0	0	0	25
		OUT	118	0	0	0	0	0

			International Boulevard at World Trade Way											
Zone	Peak Hour	Direction	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
10	AM	IN	0	0	0	0	0	0	0	0	0	0	46	0
		OUT	0	0	0	0	5	0	0	0	5	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	24	0
		OUT	0	0	0	0	15	0	0	0	15	0	0	0
11	AM	IN	0	0	0	0	0	0	0	0	0	11	11	0
		OUT	0	0	0	0	5	0	0	0	14	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	14	14	0
		OUT	0	0	0	0	5	0	0	0	14	0	0	0
12	AM	IN	0	0	0	0	0	0	0	0	0	22	0	0
		OUT	0	0	0	0	0	0	0	0	13	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	22	0	0
		OUT	0	0	0	0	0	0	0	0	17	0	0	0
13	AM	IN	0	0	0	0	0	0	0	0	0	17	0	0
		OUT	0	0	0	0	0	0	0	0	11	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	19	0	0
		OUT	0	0	0	0	0	0	0	0	11	0	0	0
14	AM	IN	0	0	0	0	0	0	0	0	0	50	0	0
		OUT	0	0	0	0	0	0	0	0	8	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	17	0	0
		OUT	0	0	0	0	0	0	0	0	80	0	0	0
15	AM	IN	0	0	0	0	0	9	0	0	0	74	0	0
		OUT	0	0	0	0	0	0	8	0	63	0	0	0
	PM	IN	0	0	0	0	0	11	0	0	0	93	0	0
		OUT	0	0	0	0	0	0	8	0	63	0	0	0
16	AM	IN	0	0	0	0	0	0	0	0	0	38	0	0
		OUT	0	0	0	0	0	0	0	0	4	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	13	0	0
		OUT	0	0	0	0	0	0	0	0	71	0	0	0
17	AM	IN	0	0	0	0	0	0	0	0	0	11	0	0
		OUT	0	0	0	0	0	0	0	0	52	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	52	0	0
		OUT	0	0	0	0	0	0	0	0	24	0	0	0
18	AM	IN	0	0	0	0	0	0	0	0	0	0	12	0
		OUT	0	0	0	0	6	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	26	0
		OUT	0	0	0	0	35	0	0	0	0	0	0	0
19	AM	IN	0	0	0	0	0	0	0	0	0	0	82	0
		OUT	0	0	0	0	25	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	44	0
		OUT	0	0	0	0	106	0	0	0	0	0	0	0
20	AM	IN	0	0	0	0	0	1	0	0	0	25	0	0
		OUT	0	0	0	0	0	0	1	0	25	0	0	0
	PM	IN	0	0	0	0	0	2	0	0	0	31	0	0
		OUT	0	0	0	0	0	0	2	0	34	0	0	0
21	AM	IN	0	0	0	0	0	0	0	0	0	113	0	0
		OUT	0	0	0	0	0	0	0	0	17	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	25	0	0
		OUT	0	0	0	0	0	0	0	0	118	0	0	0

			International Boulevard at Aviation Avenue											
Zone	Peak Hour	Direction	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
10	AM	IN	0	0	0	0	0	0	0	0	0	46	0	0
		OUT	0	0	0	0	0	0	0	0	5	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	24	0	0
		OUT	0	0	0	0	0	0	0	0	15	0	0	0
11	AM	IN	0	0	0	0	0	0	0	0	0	11	0	0
		OUT	0	0	0	0	0	0	0	0	5	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	14	0	0
		OUT	0	0	0	0	0	0	0	0	5	0	0	0
12	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
13	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
14	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
15	AM	IN	0	0	0	0	9	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	8	0
	PM	IN	0	0	0	0	11	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	8	0
16	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
17	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
18	AM	IN	0	0	0	1	0	0	0	1	0	0	0	12
		OUT	3	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	1	0	0	0	2	0	0	0	26
		OUT	18	2	2	0	0	0	0	0	0	0	0	0
19	AM	IN	0	0	0	0	4	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	1	0
	PM	IN	0	0	0	0	2	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	6	0
20	AM	IN	0	0	0	0	1	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	1	0
	PM	IN	0	0	0	0	2	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	2	0
21	AM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0

			International Boulevard at Breunig Road/ Loop Road						
Zone	Peak Hour	Direction	G1	G2	G3	G4	G5	G6	G7
10	AM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
11	AM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
12	AM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
13	AM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
14	AM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
15	AM	IN	0	0	0	0	9	0	0
		OUT	0	0	0	0	0	8	0
	PM	IN	0	0	0	0	11	0	0
		OUT	0	0	0	0	0	8	0
16	AM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
17	AM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
18	AM	IN	0	0	0	0	1	0	0
		OUT	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	1	0	0
		OUT	0	0	0	0	0	2	0
19	AM	IN	0	0	0	0	4	0	0
		OUT	0	0	0	0	0	1	0
	PM	IN	0	0	0	0	2	0	0
		OUT	0	0	0	0	0	6	0
20	AM	IN	0	0	0	0	1	0	0
		OUT	0	0	0	0	0	1	0
	PM	IN	0	0	0	0	2	0	0
		OUT	0	0	0	0	0	2	0
21	AM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0
	PM	IN	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0

Table A2 - New York

			Airport Center Drive at World Trade Way					
Zone	Peak Hour	Direction	D1	D2	D3	D4	D5	D6
New Site Traffic Volumes:								
	AM	IN	0	18	0	0	89	245
		OUT	95	0	11	102	0	0
		Total	95	18	11	102	89	245
	PM	IN	0	27	0	0	135	117
		OUT	336	0	8	85	0	0
		Total	336	27	8	85	135	117
2015 Background Volumes:								
	AM							
	PM							
2015 Full Build Volumes:								
	AM		95	18	11	102	89	245
	PM		336	27	8	85	135	117

			International Boulevard at World Trade Way											
Zone	Peak Hour	Direction	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
New Site Traffic Volumes:														
	AM	IN	0	0	0	0	0	10	0	0	0	403	1397	0
		OUT	0	0	0	0	284	0	9	0	222	0	0	0
		Total	0	0	0	0	284	10	9	0	222	403	1397	0
	PM	IN	0	0	0	0	0	13	0	0	0	293	485	0
		OUT	0	0	0	0	1280	0	9	0	489	0	0	0
		Total	0	0	0	0	1280	13	9	0	489	293	485	0
2015 Background Volumes:														
	AM			5			200			10	40	10	280	
	PM			10			570			5	20	45	445	
2015 Full Build Volumes:														
	AM		0	5	0	0	484	10	9	10	262	413	1667	0
	PM		0	10	0	0	1850	13	9	5	509	338	930	0

			International Boulevard at Aviation Avenue											
Zone	Peak Hour	Direction	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
New Site Traffic Volumes:														
	AM	IN	0	0	0	1	14	0	0	3	0	749	499	77
		OUT	49	2	8	0	1	0	0	0	206	0	10	0
		Total	49	2	8	1	15	0	0	3	206	749	499	77
	PM	IN	0	0	0	1	15	0	0	4	0	271	89	80
		OUT	72	4	10	0	2	0	0	0	1079	0	16	0
		Total	72	4	10	1	18	0	0	4	1079	271	105	80
2015 Background Volumes:														
	AM						200						260	
	PM						570						445	
2015 Full Build Volumes:														
	AM		49	2	8	1	215	0	0	3	206	749	759	77
	PM		72	4	10	1	588	0	0	4	1079	271	550	80

			International Boulevard at Breunig Road/ Loop Road						
Zone	Peak Hour	Direction	G1	G2	G3	G4	G5	G6	G7
New Site Traffic Volumes:									
	AM	IN	0	0	0	0	25	1	0
		OUT	0	0	0	0	1	18	0
		Total	0	0	0	0	26	18	0
	PM	IN	0	0	0	0	26	2	0
		OUT	0	0	0	0	2	25	0
		Total	0	0	0	0	27	27	0
2015 Background Volumes:									
	AM		200	65		75			260
	PM		570	150		100			445
2015 Full Build Volumes:									
	AM		200	65	0	75	26	18	260
	PM		570	150	0	100	27	27	445

Table A2 - New York

Zone	Peak Hour	Direction	Route 207 at Breunig Road H1	H2	H3	H4	H5	H6	Route 207 at Hudson Valley Avenue I1	I2	I3	I4	I5	I6	Route 207 at Drury Lane K1	K2	K3	K4	K5	K6	Route 207 at Route 300 L1	L2	L3	L4	L5	L6
Percent Distributions:																										
1	AM	IN				15					16			16		10			6		10			5		
		OUT					15			15			16				10	6							5	10
	PM	IN				15					15			16		10			6		10			5		
		OUT					15			16			16				10	6							5	10
2	AM	IN				25					25			26		20			6		15			10		
		OUT					25		26	25							20	6							10	15
	PM	IN				25					25			26		20			6		15			10		
		OUT					25		26	25							20	6							10	15
3	AM	IN				15					15			16		10			6		10			5		
		OUT					15		16	15							10	6							5	10
	PM	IN				15					15			16		10			6		10			5		
		OUT					15		16	15							10	6							5	10
4	AM	IN			5	5					5			6					6		5			5		
		OUT		5			5		6	5								6							5	5
	PM	IN			5	5					5			6					6		5			5		
		OUT		5			5		6	5								6							5	5
5	AM	IN				15					15			16		10			6		10			5		
		OUT					15		16	16							10	6							5	10
	PM	IN				15					15			16		10			6		10			5		
		OUT					15		16	15							10	6							5	10
6	AM	IN			10			6				6							6		5			5		
		OUT	6	10									6					6							5	5
	PM	IN			10			6				6							6		5			5		
		OUT	6	10									6					6							5	5
7	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
8	AM	IN			10			3					3	3					6		5			5		
		OUT	3	10					3			3						6							5	5
	PM	IN			10			3					3	3					6		5			5		
		OUT	3	10					3			3						6							5	5
9	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
10	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
11	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
12	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
13	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
14	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
15	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5

Table A2 - New York

Zone	Peak Hour	Direction	Route 207 at Breunig Road H1	H2	H3	H4	H5	H6	Route 207 at Hudson Valley Avenue I1	I2	I3	I4	I5	I6	Route 207 at Drury Lane K1	K2	K3	K4	K5	K6	Route 207 at Route 300 L1	L2	L3	L4	L5	L6
16	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
17	AM	IN				10					10			6					6		5			5		
		OUT					10		6	10								6							5	5
	PM	IN				10					10			6					6		5			5		
		OUT					10		6	10								6							5	5
18	AM	IN			5									6					6		3			2		
		OUT		5					6									6							2	3
	PM	IN			5									6					6		3			2		
		OUT		5					6									6							2	3
19	AM	IN			5															6	3			2		
		OUT		5											6										2	3
	PM	IN			5															6	3			2		
		OUT		5											6										2	3
20	AM	IN			5															6	3			2		
		OUT		5											6										2	3
	PM	IN			5															6	3			2		
		OUT		5											6										2	3
21	AM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
	PM	IN			10									6					6		5			5		
		OUT		10					6									6							5	5
New Site Traffic Volumes:																										
1	AM	IN	0	0	0	19	0	0	0	0	19	0	0	20	0	19	0	0	8	0	13	0	0	6	0	0
		OUT	0	0	0	0	5	0	0	6	0	0	6	0	0	0	4	2	0	0	0	0	0	0	2	4
	PM	IN	0	0	0	13	0	0	0	0	13	0	0	14	0	9	0	0	5	0	9	0	0	4	0	0
		OUT	0	0	0	0	12	0	0	12	0	0	13	0	0	0	8	5	0	0	0	0	0	0	4	8
2	AM	IN	0	0	0	16	0	0	0	0	16	0	0	17	0	13	0	0	4	0	10	0	0	7	0	0
		OUT	0	0	0	0	4	0	4	4	0	0	0	0	0	0	3	1	0	0	0	0	0	0	2	2
	PM	IN	0	0	0	8	0	0	0	0	8	0	0	9	0	7	0	0	2	0	5	0	0	3	0	0
		OUT	0	0	0	0	22	0	23	22	0	0	0	0	0	0	16	5	0	0	0	0	0	0	9	13
3	AM	IN	0	0	0	47	0	0	0	0	47	0	0	50	0	31	0	0	19	0	31	0	0	18	0	0
		OUT	0	0	0	0	7	0	7	7	0	0	0	0	0	0	5	3	0	0	0	0	0	0	2	6
	PM	IN	0	0	0	8	0	0	0	0	8	0	0	9	0	6	0	0	3	0	6	0	0	3	0	0
		OUT	0	0	0	0	41	0	44	41	0	0	0	0	0	0	28	17	0	0	0	0	0	0	14	28
4	AM	IN	0	0	30	30	0	0	0	0	30	0	0	35	0	0	0	0	35	0	30	0	0	30	0	0
		OUT	0	4	0	0	4	0	5	4	0	0	0	0	0	0	0	5	0	0	0	0	0	0	4	4
	PM	IN	0	0	6	6	0	0	0	0	6	0	0	7	0	0	0	0	7	0	6	0	0	6	0	0
		OUT	0	27	0	0	27	0	32	27	0	0	0	0	0	0	0	32	0	0	0	0	0	0	27	27
5	AM	IN	0	0	0	14	0	0	0	0	14	0	0	16	0	10	0	0	6	0	10	0	0	5	0	0
		OUT	0	0	0	0	0	0	3	3	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	2
	PM	IN	0	0	0	2	0	0	0	0	2	0	0	2	0	2	0	0	1	0	2	0	0	1	0	0
		OUT	0	0	0	0	14	0	15	14	0	0	0	0	0	0	10	6	0	0	0	0	0	0	5	10
6	AM	IN	0	0	29	0	0	17	0	0	0	17	0	0	0	0	0	0	17	0	14	0	0	14	0	0
		OUT	2	6	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	2	2
	PM	IN	0	0	5	0	0	3	0	0	0	3	0	0	0	0	0	0	3	0	3	0	0	3	0	0
		OUT	35	28	0	0	0	0	0	0	0	0	15	0	0	0	0	15	0	0	0	0	0	0	13	13
7	AM	IN	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	1	0	0
		OUT	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
	PM	IN	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2	0	0	2	0	0
		OUT	0	5	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	2	2
8	AM	IN	0	0	6	0	0	2	0	0	0	0	2	2	0	0	0	0	5	0	4	0	0	4	0	0
		OUT	2	6	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0	0	0	0	0	0	3	3
	PM	IN	0	0	7	0	0	2	0	0	0	0	2	2	0	0	0	0	4	0	3	0	0	3	0	0
		OUT	2	7	0	0	0	0	2	0	0	2	0	0	0	0	0	4	0	0	0	0	0	0	3	3
9	AM	IN	0	0	6	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	5	0	0	5	0	0
		OUT	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
	PM	IN	0	0	5	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	2	0	0	2	0	0
		OUT	9	6	0	0	0	0	4	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	3	3

Table A2 - New York

			Route 207 at Breunig Road						Route 207 at Hudson Valley Avenue						Route 207 at Drury Lane						Route 207 at Route 300					
Zone	Peak Hour	Direction	H1	H2	H3	H4	H5	H6	I1	I2	I3	I4	I5	I6	K1	K2	K3	K4	K5	K6	L1	L2	L3	L4	L5	L6
10	AM	IN	0	0	6	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	3	0	0	3	0	0
		OUT	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
	PM	IN	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0	1	0	0
		OUT	0	4	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2
11	AM	IN	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0	1	0	0
		OUT	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
	PM	IN	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2	0	0	2	0	0
		OUT	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
12	AM	IN	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0	1	0	0
		OUT	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
	PM	IN	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0	1	0	0
		OUT	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
13	AM	IN	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	1	0	0
		OUT	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
	PM	IN	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	1	0	0
		OUT	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
14	AM	IN	0	0	6	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	3	0	0	3	0	0
		OUT	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
	PM	IN	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	1	0	0
		OUT	0	10	0	0	0	0	6	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	5	5
15	AM	IN	0	0	9	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0	4	0	0	4	0	0
		OUT	0	8	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	4	4
	PM	IN	0	0	11	0	0	0	0	0	0	0	0	7	0	0	0	0	7	0	6	0	0	6	0	0
		OUT	0	8	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	4	4
16	AM	IN	0	0	5	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	2	0	0	2	0	0
		OUT	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	1	0	0
		OUT	0	9	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	4	4
17	AM	IN	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	0	1	0	0	1	0	0
		OUT	0	0	0	0	6	0	4	8	0	0	0	0	0	0	0	4	0	0	0	0	0	0	3	3
	PM	IN	0	0	0	6	0	0	0	0	6	0	0	4	0	0	0	0	4	0	3	0	0	3	0	0
		OUT	0	0	0	0	3	0	2	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	1
18	AM	IN	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
		OUT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM	IN	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0	1	0	0
		OUT	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	1
19	AM	IN	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3	0	0	2	0	0
		OUT	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1
	PM	IN	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1	0	0
		OUT	0	6	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	2	2
20	AM	IN	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0
		OUT	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1
	PM	IN	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0
		OUT	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1
21	AM	IN	0	0	14	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	7	0	0	7	0	0
		OUT	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
	PM	IN	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2	0	0	2	0	0
		OUT	0	14	0	0	0	0	8	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	7	7

Table A2 - New York

Zone	Peak Hour	Direction	Route 207 at Breunig Road						Route 207 at Hudson Valley Avenue						Route 207 at Drury Lane						Route 207 at Route 300					
			H1	H2	H3	H4	H5	H6	I1	I2	I3	I4	I5	I6	K1	K2	K3	K4	K5	K6	L1	L2	L3	L4	L5	L6
New Site Traffic Volumes																										
	AM	IN	0	0	128	127	0	19	0	0	127	17	2	175	0	66	0	0	126	7	143	0	0	112	0	0
		OUT	4	37	0	0	29	0	38	29	0	2	8	0	3	0	13	34	0	0	0	0	0	0	30	36
		Total	4	37	128	127	29	19	38	29	127	19	10	175	3	66	13	34	126	7	143	0	0	112	30	36
	PM	IN	0	0	60	43	0	5	0	0	43	3	2	70	0	22	0	0	53	5	57	0	0	46	0	0
		OUT	17	128	0	0	119	0	156	119	0	2	28	0	9	0	53	123	0	0	0	0	0	0	109	138
		Total	17	128	60	43	119	5	156	119	43	5	30	70	9	22	53	123	53	5	57	0	0	46	109	138
2015 Background Volumes:																										
	AM		5	85	80	560	720	5				570	720		95	130	275	330	645	115	230	865	615	385	440	395
	PM		5	165	115	880	520	5				730	485		120	160	245	355	355	105	655	685	840	515	420	415
2015 Full Build Volumes:																										
	AM		9	122	208	687	749	24	38	29	127	589	730	175	99	196	288	364	673	122	373	865	615	497	470	431
	PM		22	293	175	923	639	10	156	119	43	735	515	70	129	182	308	478	408	110	712	685	840	561	529	553

APPENDIX II

CAPACITY ANALYSES

2015 BACKGROUND/NO BUILD

SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT DRURY LANE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - AM PEAK HOUR	Analysis Year	01C879/TRAF/KBAAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	0	0	0	0	1	0	1
Lane group	L	T			TR					L		R
Volume (vph)	115	545			330	275				130		95
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	A	A			A	A				A		A
Startup lost time	2.0	2.0			2.0					2.0		2.0
Ext. eff. green	2.0	2.0			2.0					2.0		2.0
Arrival type	3	3			3					3		3
Unit Extension	3.0	3.0			3.0					3.0		3.0
Ped/Bike/RTOR Volume				0		0	0			0		25
Lane Width	12.0	12.0			12.0					12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	-2	N
Parking/hr												
Bus stops/hr	0	0			0					0		0
Unit Extension	3.0	3.0			3.0					3.0		3.0

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 30.0	G =	G =	G =	G = 10.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 50.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	128	606			673					144		78
Lane group cap.	377	1118			1049					357		320
v/c ratio	0.34	0.54			0.64					0.40		0.24
Green ratio	0.60	0.60			0.60					0.20		0.20
Unif. delay d1	5.0	5.9			6.5					17.4		16.8
Delay factor k	0.11	0.14			0.22					0.11		0.11
Increm. delay d2	0.5	0.5			1.3					0.7		0.4
PF factor	1.000	1.000			1.000					1.000		1.000
Control delay	5.6	6.5			7.8					18.2		17.2
Lane group LOS	A	A			A					B		B
Apprch. delay	6.3			7.8						17.8		
Approach LOS	A			A						B		
Intersec. delay	8.5			Intersection LOS						A		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT DRURY LANE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - PM PEAK HOUR	Analysis Year	01C879/TRAF/KBAPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	0	0	0	0	1	0	1
Lane group	L	T			TR					L		R
Volume (vph)	105	355			355	245				160		120
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	A	A			A	A				A		A
Startup lost time	2.0	2.0			2.0					2.0		2.0
Ext. eff. green	2.0	2.0			2.0					2.0		2.0
Arrival type	3	3			3					3		3
Unit Extension	3.0	3.0			3.0					3.0		3.0
Ped/Bike/RTOR Volume				0		0	0			0		25
Lane Width	12.0	12.0			12.0					12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	-2	N
Parking/hr												
Bus stops/hr	0	0			0					0		0
Unit Extension	3.0	3.0			3.0					3.0		3.0

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 30.0	G =	G =	G =	G = 10.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 50.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	117	394			666					178		106
Lane group cap.	380	1118			1056					357		320
v/c ratio	0.31	0.35			0.63					0.50		0.33
Green ratio	0.60	0.60			0.60					0.20		0.20
Unif. delay d1	4.9	5.1			6.4					17.8		17.1
Delay factor k	0.11	0.11			0.21					0.11		0.11
Increm. delay d2	0.5	0.2			1.2					1.1		0.6
PF factor	1.000	1.000			1.000					1.000		1.000
Control delay	5.4	5.3			7.7					18.9		17.7
Lane group LOS	A	A			A					B		B
Apprch. delay	5.3			7.7						18.5		
Approach LOS	A			A						B		
Intersec. delay	8.9			Intersection LOS						A		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT BREUNIG ROAD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	NOV. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - AM PEAK HOUR	Analysis Year	01C879/TRAF/HBAAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	0	0	1	1	0	0	0	1	0	1
Lane group		LT			T	R				L		R
Volume (vph)	5	715			560	80				85		5
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	P	P			P	P				A		A
Startup lost time		2.0			2.0	2.0				2.0		2.0
Ext. eff. green		2.0			2.0	2.0				2.0		2.0
Arrival type		3			3	3				3		3
Unit Extension		3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		25	0			0		0
Lane Width		11.0			11.0	12.0				12.0		13.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr		0			0	0				0		0
Unit Extension		3.0			3.0	3.0				3.0		3.0

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 39.0	G =	G =	G =	G = 15.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 63.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		800			622	61				94		6
Lane group cap.		1111			1115	980				421		390
v/c ratio		0.72			0.56	0.06				0.22		0.02
Green ratio		0.62			0.62	0.62				0.24		0.24
Unif. delay d1		8.2			7.0	4.8				19.3		18.4
Delay factor k		0.50			0.50	0.50				0.11		0.11
Increm. delay d2		4.0			2.0	0.1				0.3		0.0
PF factor		1.000			1.000	1.000				1.000		1.000
Control delay		12.3			9.0	4.9				19.6		18.4
Lane group LOS		B			A	A				B		B
Apprch. delay	12.3			8.6						19.5		
Approach LOS	B			A						B		
Intersec. delay	11.2			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT BREUNIG ROAD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	NOV. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - PM PEAK HOUR	Analysis Year	01C879/TRAF/HBAPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	0	0	1	1	0	0	0	1	0	1
Lane group		LT			T	R				L		R
Volume (vph)	5	520			880	115				165		5
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	P	P			P	P				A		A
Startup lost time		2.0			2.0	2.0				2.0		2.0
Ext. eff. green		2.0			2.0	2.0				2.0		2.0
Arrival type		3			3	3				3		3
Unit Extension		3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		20	0			0		0
Lane Width		11.0			11.0	12.0				12.0		13.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr		0			0	0				0		0
Unit Extension		3.0			3.0	3.0				3.0		3.0

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 39.0	G =	G =	G =	G = 15.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 63.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		584			978	106				183		6
Lane group cap.		1106			1115	980				421		390
v/c ratio		0.53			0.88	0.11				0.43		0.02
Green ratio		0.62			0.62	0.62				0.24		0.24
Unif. delay d1		6.8			10.0	4.9				20.4		18.4
Delay factor k		0.50			0.50	0.50				0.11		0.11
Increm. delay d2		1.8			9.8	0.2				0.7		0.0
PF factor		1.000			1.000	1.000				1.000		1.000
Control delay		8.6			19.8	5.1				21.1		18.4
Lane group LOS		A			B	A				C		B
Apprch. delay	8.6			18.4						21.0		
Approach LOS	A			B						C		
Intersec. delay	15.6			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT ROUTE 300
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - AM PEAK	Analysis Year	01C879/LBAAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	1	0	0	0	2	0	1
Lane group	L	T			T	R				L		R
Volume (vph)	395	440			385	615				865		230
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	A	P			P	P				A		A
Startup lost time	2.0	2.0			2.0	2.0				2.0		2.0
Ext. eff. green	2.0	2.0			2.0	2.0				2.0		2.0
Arrival type	3	3			3	3				3		3
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		95	0			0		25
Lane Width	12.0	12.0			12.0	12.0				12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr	0	0			0	0				0		0
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0

Phasing	EB Only	EW Perm	03	04	SB Only	06	07	08
Timing	G = 15.0	G = 33.0	G =	G =	G = 27.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	439	489			428	578				961		228
Lane group cap.	502	1097			683	1143				1030		827
v/c ratio	0.87	0.45			0.63	0.51				0.93		0.28
Green ratio	0.59	0.59			0.37	0.72				0.30		0.52
Unif. delay d1	13.6	10.3			23.4	5.5				30.6		12.0
Delay factor k	0.40	0.50			0.50	0.50				0.45		0.11
Increm. delay d2	15.7	1.3			4.3	1.6				14.7		0.2
PF factor	1.000	1.000			1.000	1.000				1.000		1.000
Control delay	29.4	11.6			27.7	7.1				45.3		12.2
Lane group LOS	C	B			C	A				D		B
Apprch. delay	20.0+			15.9						38.9		
Approach LOS	C			B						D		
Intersec. delay	25.9			Intersection LOS						C		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT ROUTE 300
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - PM PEAK	Analysis Year	01C879/LBAPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	1	0	0	0	2	0	1
Lane group	L	T			T	R				L		R
Volume (vph)	415	420			515	840				685		655
% Heavy veh	2	2			2	2				2		2
PHF	0.92	0.92			0.92	0.92				0.92		0.92
Actuated (P/A)	A	P			P	P				A		A
Startup lost time	2.0	2.0			2.0	2.0				2.0		2.0
Ext. eff. green	2.0	2.0			2.0	2.0				2.0		2.0
Arrival type	3	3			3	3				3		3
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		0	0			0		0
Lane Width	12.0	12.0			12.0	12.0				12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr	0	0			0	0				0		0
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0

Phasing	EB Only	EW Perm	03	04	SB Only	06	07	08
Timing	G = 20.0	G = 34.0	G =	G =	G = 21.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	451	457			560	913				745		712
Lane group cap.	550	1221			704	1055				801		809
v/c ratio	0.82	0.37			0.80	0.87				0.93		0.88
Green ratio	0.66	0.66			0.38	0.67				0.23		0.51
Unif. delay d1	16.4	7.1			24.9	11.8				33.8		19.5
Delay factor k	0.36	0.50			0.50	0.50				0.45		0.41
Increm. delay d2	9.6	0.9			9.1	9.5				17.2		11.0
PF factor	1.000	1.000			1.000	1.000				1.000		1.000
Control delay	26.0	8.0			34.0	21.3				51.0		30.6
Lane group LOS	C	A			C	C				D		C
Apprch. delay	16.9			26.1						41.0		
Approach LOS	B			C						D		
Intersec. delay	29.6			Intersection LOS						C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	BREUNIG RD AT SUE KELLY AVE
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	NOV. 2002	Analysis Year	01C879/TRAF/ABAAM
Analysis Time Period	2015 BACKGROUND - AM PEAK HOUR		

Project Description	NEW YORK INTERNATIONAL PLAZA
East/West Street: SUE KELLY AVENUE	North/South Street: BREUNIG ROAD
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	75	10	0	65	5
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	83	11	0	72	5
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L		TR			TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	5	0	5
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	5	0	5
Percent Heavy Vehicles	2	2	2	2	2	2
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	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	5						10	
C (m) (vph)	1522						893	
v/c	0.00						0.01	
95% queue length	0.01						0.03	
Control Delay	7.4						9.1	
LOS	A						A	
Approach Delay	--	--				9.1		
Approach LOS	--	--				A		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	BREUNIG RD AT SUE KELLY AVE
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	NOV. 2002	Analysis Year	01C879/TRAF/ABAPM
Analysis Time Period	2015 BACKGROUND - PM PEAK HOUR		

Project Description	NEW YORK INTERNATIONAL PLAZA
East/West Street: SUE KELLY AVENUE	North/South Street: BREUNIG ROAD
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	100	0	0	150	5
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	111	0	0	166	5
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	5	0	5
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	5	0	5
Percent Heavy Vehicles	2	2	2	2	2	2
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	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	5						10	
C (m) (vph)	1406						778	
v/c	0.00						0.01	
95% queue length	0.01						0.04	
Control Delay	7.6						9.7	
LOS	A						A	
Approach Delay	--	--				9.7		
Approach LOS	--	--				A		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTER. BLVD @ WORLD TRADE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - AM PEAK	Analysis Year	01C879/TRAF/EBAAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	5	260	10	5	200	5	40	10	5	5	5	5
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		4	4			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0			12.0			12.0	
Parking/Grade/Parking	N	6	N	N	-6	N	N	2	N	N	2	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 66.0	G =	G =	G =	G = 14.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	6	300		6	228			61			18	
Lane group cap.	807	2504		800	2663			222			252	
v/c ratio	0.01	0.12		0.01	0.09			0.27			0.07	
Green ratio	0.73	0.73		0.73	0.73			0.16			0.16	
Unif. delay d1	3.2	3.5		3.2	3.4			33.5			32.4	
Delay factor k	0.11	0.11		0.11	0.11			0.11			0.11	
Increm. delay d2	0.0	0.0		0.0	0.0			0.7			0.1	
PF factor	1.000	1.000		0.216	0.216			1.000			1.000	
Control delay	3.2	3.5		0.7	0.8			34.2			32.6	
Lane group LOS	A	A		A	A			C			C	
Apprch. delay	3.5			0.7			34.2			32.6		
Approach LOS	A			A			C			C		
Intersec. delay	6.3			Intersection LOS						A		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTER. @ WORLD TRADE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - PM PEAK	Analysis Year	01C879/TRAF/EBAPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	5	445	45	5	570	5	20	5	5	5	10	5
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		4	4			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0			12.0			12.0	
Parking/Grade/Parking	N	6	N	N	-6	N	N	2	N	N	2	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 54.0	G =	G =	G =	G = 26.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	6	544		6	639			34			23	
Lane group cap.	443	2032		500	2184			451			492	
v/c ratio	0.01	0.27		0.01	0.29			0.08			0.05	
Green ratio	0.60	0.60		0.60	0.60			0.29			0.29	
Unif. delay d1	7.3	8.6		7.3	8.7			23.3			23.1	
Delay factor k	0.11	0.11		0.11	0.11			0.11			0.11	
Increm. delay d2	0.0	0.1		0.0	0.1			0.1			0.0	
PF factor	1.000	1.000		0.575	0.575			1.000			1.000	
Control delay	7.3	8.6		4.2	5.1			23.3			23.1	
Lane group LOS	A	A		A	A			C			C	
Apprch. delay	8.6			5.1			23.3			23.1		
Approach LOS	A			A			C			C		
Intersec. delay	7.5			Intersection LOS						A		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@AVIATION
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	NOV. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - AM PEAK	Analysis Year	01C879/TRAF/FBAAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	5	260	5	5	200	5	5	5	5	5	5	5
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		3	3			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0			12.0			12.0	
Parking/Grade/Parking	N	-6	N	N	6	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 60.0	G =	G =	G =	G = 20.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 90.0			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	6	295		6	228			18			18	
Lane group cap.	795	2471		702	2325			380			380	
v/c ratio	0.01	0.12		0.01	0.10			0.05			0.05	
Green ratio	0.67	0.67		0.67	0.67			0.22			0.22	
Unif. delay d1	5.0	5.4		5.0	5.3			27.5			27.5	
Delay factor k	0.11	0.11		0.11	0.11			0.11			0.11	
Increm. delay d2	0.0	0.0		0.0	0.0			0.1			0.1	
PF factor	1.000	1.000		1.000	1.000			1.000			1.000	
Control delay	5.0	5.5		5.0	5.4			27.6			27.6	
Lane group LOS	A	A		A	A			C			C	
Apprch. delay	5.4			5.4			27.6			27.6		
Approach LOS	A			A			C			C		
Intersec. delay	6.8			Intersection LOS						A		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@AVIATION
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	NOV. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - PM PEAK	Analysis Year	01C879/TRAF/FBAPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	5	445	5	5	570	5	5	5	5	5	5	5
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		3	3			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0			13.0			11.0	
Parking/Grade/Parking	N	-6	N	N	6	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 40.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	6	500		6	639			18			18	
Lane group cap.	298	1650		350	1554			798			747	
v/c ratio	0.02	0.30		0.02	0.41			0.02			0.02	
Green ratio	0.44	0.44		0.44	0.44			0.44			0.44	
Unif. delay d1	14.0	16.1		14.0	17.0			14.0			14.0	
Delay factor k	0.11	0.11		0.11	0.11			0.11			0.11	
Increm. delay d2	0.0	0.1		0.0	0.2			0.0			0.0	
PF factor	1.000	1.000		1.000	1.000			1.000			1.000	
Control delay	14.0	16.2		14.0	17.2			14.0			14.1	
Lane group LOS	B	B		B	B			B			B	
Apprch. delay	16.1			17.1			14.0			14.1		
Approach LOS	B			B			B			B		
Intersec. delay	16.6			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@BREUNIG RD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	12/9/2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - AM PEAK	Analysis Year	01C879/GBAAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	1	0	0	0	0	0	0	0	1	1
Lane group		T	R					LR			LT	R
Volume (vph)		260	5				5		75	5	65	200
% Heavy veh		2	2				2		2	2	2	2
PHF		0.90	0.90				0.90		0.90	0.90	0.90	0.90
Actuated (P/A)		A	A				P		P	P	P	P
Startup lost time		2.0	2.0					2.0			2.0	2.0
Ext. eff. green		2.0	2.0					2.0			2.0	2.0
Arrival type		3	3					3			3	3
Unit Extension		3.0	3.0					3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		0				0		0	0		0
Lane Width		12.0	12.0					12.0			12.0	12.0
Parking/Grade/Parking	N	0	N	N		N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr		0	0					0			0	0
Unit Extension		3.0	3.0					3.0			3.0	3.0

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 20.0	G =	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 60.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		289	6					89			78	222
Lane group cap.		621	528					788			928	792
v/c ratio		0.47	0.01					0.11			0.08	0.28
Green ratio		0.33	0.33					0.50			0.50	0.50
Unif. delay d1		15.8	13.4					7.9			7.8	8.7
Delay factor k		0.11	0.11					0.50			0.50	0.50
Increm. delay d2		0.6	0.0					0.3			0.2	0.9
PF factor		1.000	1.000					1.000			1.000	1.000
Control delay		16.3	13.4					8.2			8.0	9.6
Lane group LOS		B	B					A			A	A
Apprch. delay	16.3						8.2			9.2		
Approach LOS	B						A			A		
Intersec. delay	12.1			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@BREUNIG RD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	12/9/2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BACKGROUND - PM PEAK	Analysis Year	01C879/GBAPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	1	0	0	0	0	0	0	0	1	1
Lane group		T	R					LR			LT	R
Volume (vph)		445	5				5		100	5	150	570
% Heavy veh		2	2				2		2	2	2	2
PHF		0.90	0.90				0.90		0.90	0.90	0.90	0.90
Actuated (P/A)		A	A				P		P	P	P	P
Startup lost time		2.0	2.0					2.0			2.0	2.0
Ext. eff. green		2.0	2.0					2.0			2.0	2.0
Arrival type		3	3					3			3	3
Unit Extension		3.0	3.0					3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		0				0		0	0		0
Lane Width		12.0	12.0					12.0			12.0	12.0
Parking/Grade/Parking	N	0	N	N		N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr		0	0					0			0	0
Unit Extension		3.0	3.0					3.0			3.0	3.0

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 20.0	G =	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 60.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		494	6					117			173	633
Lane group cap.		621	528					778			930	792
v/c ratio		0.80	0.01					0.15			0.19	0.80
Green ratio		0.33	0.33					0.50			0.50	0.50
Unif. delay d1		18.1	13.4					8.1			8.3	12.5
Delay factor k		0.34	0.11					0.50			0.50	0.50
Increm. delay d2		7.1	0.0					0.4			0.4	8.3
PF factor		1.000	1.000					1.000			1.000	1.000
Control delay		25.3	13.4					8.5			8.7	20.8
Lane group LOS		C	B					A			A	C
Apprch. delay	25.1						8.5			18.2		
Approach LOS	C						A			B		
Intersec. delay	19.8			Intersection LOS						B		

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2015 FULL BUILD
WITHOUT IMPROVEMENTS

SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT DRURY LANE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - AM PEAK HOUR	Analysis Year	01C879/TRAF/KBUAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	0	0	0	0	1	0	1
Lane group	L	T			TR					L		R
Volume (vph)	122	673			364	288				196		98
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	A	A			A	A				A		A
Startup lost time	2.0	2.0			2.0					2.0		2.0
Ext. eff. green	2.0	2.0			2.0					2.0		2.0
Arrival type	3	3			3					3		3
Unit Extension	3.0	3.0			3.0					3.0		3.0
Ped/Bike/RTOR Volume				0		0	0			0		25
Lane Width	12.0	12.0			12.0					12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	-2	N
Parking/hr												
Bus stops/hr	0	0			0					0		0
Unit Extension	3.0	3.0			3.0					3.0		3.0

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 30.0	G =	G =	G =	G = 10.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 50.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	136	748			724					218		81
Lane group cap.	351	1118			1051					357		320
v/c ratio	0.39	0.67			0.69					0.61		0.25
Green ratio	0.60	0.60			0.60					0.20		0.20
Unif. delay d1	5.2	6.7			6.8					18.2		16.9
Delay factor k	0.11	0.24			0.26					0.20		0.11
Increm. delay d2	0.7	1.6			1.9					3.1		0.4
PF factor	1.000	1.000			1.000					1.000		1.000
Control delay	5.9	8.2			8.7					21.3		17.3
Lane group LOS	A	A			A					C		B
Apprch. delay	7.9			8.7						20.2		
Approach LOS	A			A						C		
Intersec. delay	10.1			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT DRURY LANE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - PM PEAK HOUR	Analysis Year	01C879/TRAF/KBUPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	0	0	0	0	1	0	1
Lane group	L	T			TR					L		R
Volume (vph)	110	408			498	308				182		129
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	A	A			A	A				A		A
Startup lost time	2.0	2.0			2.0					2.0		2.0
Ext. eff. green	2.0	2.0			2.0					2.0		2.0
Arrival type	3	3			3					3		3
Unit Extension	3.0	3.0			3.0					3.0		3.0
Ped/Bike/RTOR Volume				0		0	0			0		25
Lane Width	12.0	12.0			12.0					12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	-2	N
Parking/hr												
Bus stops/hr	0	0			0					0		0
Unit Extension	3.0	3.0			3.0					3.0		3.0

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 30.0	G =	G =	G =	G = 10.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 50.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	122	453			895					202		116
Lane group cap.	275	1118			1060					357		320
v/c ratio	0.44	0.41			0.84					0.57		0.36
Green ratio	0.60	0.60			0.60					0.20		0.20
Unif. delay d1	5.5	5.3			8.1					18.0		17.3
Delay factor k	0.11	0.11			0.38					0.16		0.11
Increm. delay d2	1.1	0.2			6.4					2.1		0.7
PF factor	1.000	1.000			1.000					1.000		1.000
Control delay	6.6	5.5			14.5					20.1		18.0
Lane group LOS	A	A			B					C		B
Apprch. delay	5.8			14.5						19.3		
Approach LOS	A			B						B		
Intersec. delay	12.5			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT HUDSON VALLEY RD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	SEPT. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - AM PEAK	Analysis Year	01C879/TRAF/IBUAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	0	0	0	0	0	1	0
Lane group	L	TR			LTR						LTR	
Volume (vph)	189	725	40	45	589	127				29	0	38
% Heavy veh	2	2	2	2	2	2				2	2	2
PHF	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A				A	A	A
Startup lost time	2.0	2.0			2.0						2.0	
Ext. eff. green	2.0	2.0			2.0						2.0	
Arrival type	3	4			3						3	
Unit Extension	3.0	3.0			3.0						3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0			0		0
Lane Width	10.0	11.0			11.0						12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr	0	0			0						0	
Unit Extension	3.0	3.0			3.0						3.0	

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 30.0	G =	G =	G =	G = 10.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 50.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	210	850			845						74	
Lane group cap.	351	1072			975						337	
v/c ratio	0.60	0.79			0.87						0.22	
Green ratio	0.60	0.60			0.60						0.20	
Unif. delay d1	6.2	7.6			8.3						16.7	
Delay factor k	0.19	0.34			0.40						0.11	
Increm. delay d2	2.8	4.2			8.3						0.3	
PF factor	1.000	0.575			1.000						1.000	
Control delay	9.0	8.6			16.7						17.1	
Lane group LOS	A	A			B						B	
Apprch. delay	8.7			16.7						17.1		
Approach LOS	A			B						B		
Intersec. delay	12.4			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT HUDSON VALLEY RD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	SEPT. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BUILD - PM PEAK	Analysis Year	01C879/TRAF/IBUPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	0	0	0	0	0	1	0
Lane group	L	TR			LTR						LTR	
Volume (vph)	70	515	2	2	735	44				119	0	156
% Heavy veh	2	2	2	2	2	2				2	2	2
PHF	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P				A	A	A
Startup lost time	2.0	2.0			2.0						2.0	
Ext. eff. green	2.0	2.0			2.0						2.0	
Arrival type	3	4			3						3	
Unit Extension	3.0	3.0			3.0						3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0			0		0
Lane Width	10.0	11.0			11.0						12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr	0	0			0						0	
Unit Extension	3.0	3.0			3.0						3.0	

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 28.0	G =	G =	G =	G = 12.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 50.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	78	574			868						305	
Lane group cap.	297	1008			1000						404	
v/c ratio	0.26	0.57			0.87						0.75	
Green ratio	0.56	0.56			0.56						0.24	
Unif. delay d1	5.7	7.1			9.4						17.6	
Delay factor k	0.50	0.50			0.50						0.31	
Increm. delay d2	2.1	2.3			10.1						7.9	
PF factor	1.000	0.662			1.000						1.000	
Control delay	7.8	7.0			19.5						25.5	
Lane group LOS	A	A			B						C	
Apprch. delay	7.1			19.5						25.5		
Approach LOS	A			B						C		
Intersec. delay	16.1			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT BREUNIG ROAD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	SEPT. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - AM PEAK HOUR	Analysis Year	01C879/TRAF/HBUAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	0	0	1	1	0	0	0	1	0	1
Lane group		LT			T	R				L		R
Volume (vph)	24	744			687	208				122		9
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	P	P			P	P				A		A
Startup lost time		2.0			2.0	2.0				2.0		2.0
Ext. eff. green		2.0			2.0	2.0				2.0		2.0
Arrival type		3			3	3				3		3
Unit Extension		3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		25	0			0		0
Lane Width		11.0			11.0	12.0				12.0		13.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr		0			0	0				0		0
Unit Extension		3.0			3.0	3.0				3.0		3.0

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 39.0	G =	G =	G =	G = 15.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 63.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		854			763	203				136		10
Lane group cap.		1079			1115	980				421		390
v/c ratio		0.79			0.68	0.21				0.32		0.03
Green ratio		0.62			0.62	0.62				0.24		0.24
Unif. delay d1		9.0			7.9	5.2				19.8		18.4
Delay factor k		0.50			0.50	0.50				0.11		0.11
Increm. delay d2		6.0			3.4	0.5				0.4		0.0
PF factor		1.000			1.000	1.000				1.000		1.000
Control delay		14.9			11.3	5.7				20.3		18.4
Lane group LOS		B			B	A				C		B
Apprch. delay	14.9			10.2						20.1		
Approach LOS	B			B						C		
Intersec. delay	13.0			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT BREUNIG ROAD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	SEPT. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - PM PEAK HOUR	Analysis Year	01C879/TRAF/HBUPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	0	0	1	1	0	0	0	1	0	1
Lane group		LT			T	R				L		R
Volume (vph)	10	639			923	175				293		22
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	P	P			P	P				A		A
Startup lost time		2.0			2.0	2.0				2.0		2.0
Ext. eff. green		2.0			2.0	2.0				2.0		2.0
Arrival type		3			3	3				3		3
Unit Extension		3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		20	0			0		0
Lane Width		11.0			11.0	12.0				12.0		13.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr		0			0	0				0		0
Unit Extension		3.0			3.0	3.0				3.0		3.0

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 39.0	G =	G =	G =	G = 15.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 63.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		721			1026	172				326		24
Lane group cap.		1097			1115	980				421		390
v/c ratio		0.66			0.92	0.18				0.77		0.06
Green ratio		0.62			0.62	0.62				0.24		0.24
Unif. delay d1		7.7			10.6	5.1				22.4		18.6
Delay factor k		0.50			0.50	0.50				0.32		0.11
Increm. delay d2		3.1			13.5	0.4				8.8		0.1
PF factor		1.000			1.000	1.000				1.000		1.000
Control delay		10.8			24.1	5.5				31.2		18.6
Lane group LOS		B			C	A				C		B
Apprch. delay	10.8			21.5						30.3		
Approach LOS	B			C						C		
Intersec. delay	19.4			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT ROUTE 300
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - AM PEAK	Analysis Year	01C879/LBUAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	1	0	0	0	2	0	1
Lane group	L	T			T	R				L		R
Volume (vph)	431	470			497	615				865		373
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	A	P			P	P				A		A
Startup lost time	2.0	2.0			2.0	2.0				2.0		2.0
Ext. eff. green	2.0	2.0			2.0	2.0				2.0		2.0
Arrival type	3	3			3	3				3		3
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		95	0			0		25
Lane Width	12.0	12.0			12.0	12.0				12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr	0	0			0	0				0		0
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0

Phasing	EB Only	EW Perm	03	04	SB Only	06	07	08
Timing	G = 15.0	G = 33.0	G =	G =	G = 27.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	479	522			552	578				961		387
Lane group cap.	442	1097			683	1143				1030		827
v/c ratio	1.08	0.48			0.81	0.51				0.93		0.47
Green ratio	0.59	0.59			0.37	0.72				0.30		0.52
Unif. delay d1	20.1	10.6			25.7	5.5				30.6		13.6
Delay factor k	0.50	0.50			0.50	0.50				0.45		0.11
Increm. delay d2	67.2	1.5			10.0	1.6				14.7		0.4
PF factor	1.000	1.000			1.000	1.000				1.000		1.000
Control delay	87.3	12.0			35.6	7.1				45.3		14.0
Lane group LOS	F	B			D	A				D		B
Apprch. delay	48.1			21.0						36.3		
Approach LOS	D			C						D		
Intersec. delay	34.7			Intersection LOS						C		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT ROUTE 300
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - PM PEAK	Analysis Year	01C879/LBUPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	1	0	0	0	2	0	1
Lane group	L	T			T	R				L		R
Volume (vph)	553	529			561	840				685		712
% Heavy veh	2	2			2	2				2		2
PHF	0.92	0.92			0.92	0.92				0.92		0.92
Actuated (P/A)	A	P			P	P				A		A
Startup lost time	2.0	2.0			2.0	2.0				2.0		2.0
Ext. eff. green	2.0	2.0			2.0	2.0				2.0		2.0
Arrival type	3	3			3	3				3		3
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		0	0			0		0
Lane Width	12.0	12.0			12.0	12.0				12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr	0	0			0	0				0		0
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0

Phasing	EB Only	EW Perm	03	04	SB Only	06	07	08
Timing	G = 20.0	G = 34.0	G =	G =	G = 21.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	601	575			610	913				745		774
Lane group cap.	529	1221			704	1055				801		809
v/c ratio	1.14	0.47			0.87	0.87				0.93		0.96
Green ratio	0.66	0.66			0.38	0.67				0.23		0.51
Unif. delay d1	22.5	7.7			25.9	11.8				33.8		21.0
Delay factor k	0.50	0.50			0.50	0.50				0.45		0.47
Increm. delay d2	82.4	1.3			13.5	9.5				17.2		21.7
PF factor	1.000	1.000			1.000	1.000				1.000		1.000
Control delay	104.9	9.0			39.4	21.3				51.0		42.7
Lane group LOS	F	A			D	C				D		D
Apprch. delay	58.0			28.6						46.8		
Approach LOS	E			C						D		
Intersec. delay	43.3			Intersection LOS						D		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	BREUNIG RD AT SUE KELLY AVE
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	SEPT. 2002	Analysis Year	01C879/TRAF/ABUAM
Analysis Time Period	2015 FULL BUILD - AM PEAK HOUR		

Project Description	NEW YORK INTERNATIONAL PLAZA
East/West Street: SUE KELLY AVENUE	North/South Street: BREUNIG ROAD
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	105	117	10	0	85	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	116	130	11	0	94	1
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L		TR			TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	1	0	21
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	1	0	23
Percent Heavy Vehicles	2	2	2	2	2	2
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	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	116						24	
C (m) (vph)	1499						929	
v/c	0.08						0.03	
95% queue length	0.25						0.08	
Control Delay	7.6						9.0	
LOS	A						A	
Approach Delay	--	--				9.0		
Approach LOS	--	--				A		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	BREUNIG RD AT SUE KELLY AVE
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	SEPT. 2002	Analysis Year	01C879/TRAF/ABUPM
Analysis Time Period	2015 FULL BUILD - PM PEAK HOUR		

Project Description	NEW YORK INTERNATIONAL PLAZA
East/West Street: SUE KELLY AVENUE	North/South Street: BREUNIG ROAD
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	37	128	0	0	191	2
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	41	142	0	0	212	2
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	2	0	104
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	2	0	115
Percent Heavy Vehicles	2	2	2	2	2	2
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	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	41						117	
C (m) (vph)	1356						820	
v/c	0.03						0.14	
95% queue length	0.09						0.50	
Control Delay	7.7						10.1	
LOS	A						B	
Approach Delay	--	--				10.1		
Approach LOS	--	--				B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTER. BLVD @ WORLD TRADE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BUILD W/O IMP - AM PEAK	Analysis Year	01C879/TRAF/EBUWOAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	5	1657	413	10	484	5	262	5	9	5	10	5
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		4	4			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0			12.0			12.0	
Parking/Grade/Parking	N	6	N	N	-6	N	N	2	N	N	2	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 66.0	G =	G =	G =	G = 14.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	6	2300		11	544			307			23	
Lane group cap.	595	2442		85	2669			206			261	
v/c ratio	0.01	0.94		0.13	0.20			1.49			0.09	
Green ratio	0.73	0.73		0.73	0.73			0.16			0.16	
Unif. delay d1	3.2	10.3		3.5	3.8			38.0			32.5	
Delay factor k	0.11	0.45		0.11	0.11			0.50			0.11	
Increm. delay d2	0.0	8.3		0.7	0.0			244.6			0.1	
PF factor	1.000	1.000		0.216	0.216			1.000			1.000	
Control delay	3.2	18.6		1.5	0.8			282.6			32.7	
Lane group LOS	A	B		A	A			F			C	
Apprch. delay	18.6			0.9			282.6			32.7		
Approach LOS	B			A			F			C		
Intersec. delay	41.0			Intersection LOS						D		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTER. @ WORLD TRADE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BUILD W/O IMP - PM PEAK	Analysis Year	01C879/TRAF/EBUWOPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	5	930	338	10	1850	5	509	5	9	5	10	5
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		4	4			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0			12.0			12.0	
Parking/Grade/Parking	N	6	N	N	-6	N	N	2	N	N	2	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 54.0	G =	G =	G =	G = 26.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	6	1409		11	2062			582			23	
Lane group cap.	80	1978		137	2186			380			488	
v/c ratio	0.08	0.71		0.08	0.94			1.53			0.05	
Green ratio	0.60	0.60		0.60	0.60			0.29			0.29	
Unif. delay d1	7.5	12.6		7.6	16.6			32.0			23.1	
Delay factor k	0.11	0.28		0.11	0.46			0.50			0.11	
Increm. delay d2	0.4	1.2		0.3	9.2			252.2			0.0	
PF factor	1.000	1.000		0.575	0.575			1.000			1.000	
Control delay	7.9	13.8		4.6	18.7			284.2			23.1	
Lane group LOS	A	B		A	B			F			C	
Apprch. delay	13.8			18.6			284.2			23.1		
Approach LOS	B			B			F			C		
Intersec. delay	54.7			Intersection LOS						D		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@AVIATION
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	NOV. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BUILD W/O - AM PEAK	Analysis Year	01C879/TRAF/FBUWOAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	77	759	749	5	215	1	206	3	5	8	2	49
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		3	3			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0			12.0			12.0	
Parking/Grade/Parking	N	-6	N	N	6	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 60.0	G =	G =	G =	G = 20.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	86	1675		6	240			238			65	
Lane group cap.	786	2294		107	2333			292			356	
v/c ratio	0.11	0.73		0.06	0.10			0.82			0.18	
Green ratio	0.67	0.67		0.67	0.67			0.22			0.22	
Unif. delay d1	5.4	9.7		5.2	5.4			33.2			28.4	
Delay factor k	0.11	0.29		0.11	0.11			0.36			0.11	
Increm. delay d2	0.1	1.2		0.2	0.0			16.2			0.2	
PF factor	1.000	1.000		1.000	1.000			1.000			1.000	
Control delay	5.5	11.0		5.4	5.4			49.4			28.6	
Lane group LOS	A	B		A	A			D			C	
Apprch. delay	10.7			5.4			49.4			28.6		
Approach LOS	B			A			D			C		
Intersec. delay	14.6			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@AVIATION
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	NOV. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 BUILD W/O - PM PEAK	Analysis Year	01C879/TRAF/FBUWOPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	80	550	271	5	588	1	1079	4	5	10	4	72
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		3	3			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0			13.0			11.0	
Parking/Grade/Parking	N	-6	N	N	6	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 40.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	89	912		6	654			1209			95	
Lane group cap.	291	1571		172	1556			576			674	
v/c ratio	0.31	0.58		0.03	0.42			2.10			0.14	
Green ratio	0.44	0.44		0.44	0.44			0.44			0.44	
Unif. delay d1	16.1	18.7		14.1	17.1			25.0			14.8	
Delay factor k	0.11	0.17		0.11	0.11			0.50			0.11	
Increm. delay d2	0.6	0.5		0.1	0.2			500.4			0.1	
PF factor	1.000	1.000		1.000	1.000			1.000			1.000	
Control delay	16.7	19.3		14.2	17.3			525.4			14.9	
Lane group LOS	B	B		B	B			F			B	
Apprch. delay	19.0			17.2			525.4			14.9		
Approach LOS	B			B			F			B		
Intersec. delay	225.0			Intersection LOS						F		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@BREUNIG RD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	12/9/2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - AM PEAK	Analysis Year	01C879/GBUAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	1	0	0	0	0	0	0	0	1	1
Lane group		T	R					LR			LT	R
Volume (vph)		260	5				5		75	5	65	200
% Heavy veh		2	2				2		2	2	2	2
PHF		0.90	0.90				0.90		0.90	0.90	0.90	0.90
Actuated (P/A)		A	A				P		P	P	P	P
Startup lost time		2.0	2.0					2.0			2.0	2.0
Ext. eff. green		2.0	2.0					2.0			2.0	2.0
Arrival type		3	3					3			3	3
Unit Extension		3.0	3.0					3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		0				0		0	0		0
Lane Width		12.0	12.0					12.0			12.0	12.0
Parking/Grade/Parking	N	0	N	N		N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr		0	0					0			0	0
Unit Extension		3.0	3.0					3.0			3.0	3.0

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 20.0	G =	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 60.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		289	6					89			78	222
Lane group cap.		621	528					788			928	792
v/c ratio		0.47	0.01					0.11			0.08	0.28
Green ratio		0.33	0.33					0.50			0.50	0.50
Unif. delay d1		15.8	13.4					7.9			7.8	8.7
Delay factor k		0.11	0.11					0.50			0.50	0.50
Increm. delay d2		0.6	0.0					0.3			0.2	0.9
PF factor		1.000	1.000					1.000			1.000	1.000
Control delay		16.3	13.4					8.2			8.0	9.6
Lane group LOS		B	B					A			A	A
Apprch. delay	16.3						8.2			9.2		
Approach LOS	B						A			A		
Intersec. delay	12.1			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@BREUNIG RD
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	12/9/2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - PM PEAK	Analysis Year	01C879/GBUPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	1	0	0	0	0	0	0	0	1	1
Lane group		T	R					LR			LT	R
Volume (vph)		445	27				27		100	5	150	570
% Heavy veh		2	2				2		2	2	2	2
PHF		0.90	0.90				0.90		0.90	0.90	0.90	0.90
Actuated (P/A)		A	A				P		P	P	P	P
Startup lost time		2.0	2.0					2.0			2.0	2.0
Ext. eff. green		2.0	2.0					2.0			2.0	2.0
Arrival type		3	3					3			3	3
Unit Extension		3.0	3.0					3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		0				0		0	0		0
Lane Width		12.0	12.0					12.0			12.0	12.0
Parking/Grade/Parking	N	0	N	N		N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr		0	0					0			0	0
Unit Extension		3.0	3.0					3.0			3.0	3.0

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 20.0	G =	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate		494	30					141			173	633
Lane group cap.		621	528					724			930	792
v/c ratio		0.80	0.06					0.19			0.19	0.80
Green ratio		0.33	0.33					0.50			0.50	0.50
Unif. delay d1		18.1	13.6					8.3			8.3	12.5
Delay factor k		0.34	0.11					0.50			0.50	0.50
Increm. delay d2		7.1	0.0					0.6			0.4	8.3
PF factor		1.000	1.000					1.000			1.000	1.000
Control delay		25.3	13.6					8.9			8.7	20.8
Lane group LOS		C	B					A			A	C
Apprch. delay	24.6						8.9			18.2		
Approach LOS	C						A			B		
Intersec. delay	19.6			Intersection LOS						B		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	AIRPORT CENTER DR@WORLD TRADE
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	SEPT. 2002	Analysis Year	01C879/TRAF/DBUAM
Analysis Time Period	2015 FULL BUILD - AM PEAK HOUR		

Project Description NEW YORK INTERNATIONAL PLAZA	
East/West Street: WORLD TRADE WAY/AIRPORT CTR DR	North/South Street: WORLD TRADE WAY
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	102	11	0	0	18	95
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	113	12	0	0	20	105
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	245	0	89
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	272	0	98
Percent Heavy Vehicles	0	0	0	2	0	2
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	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	113						370	
C (m) (vph)	1462						696	
v/c	0.08						0.53	
95% queue length	0.25						3.16	
Control Delay	7.7						15.9	
LOS	A						C	
Approach Delay	--	--					15.9	
Approach LOS	--	--					C	

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	AIRPORT CENTER DR@WORLD TRADE
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	SEPT. 2002	Analysis Year	01C879/TRAF/DBUPM
Analysis Time Period	2015 FULL BUILD - PM PEAK HOUR		

Project Description: NEW YORK INTERNATIONAL PLAZA

East/West Street: WORLD TRADE WAY/AIRPORT CTR DR | North/South Street: WORLD TRADE WAY

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	85	8	0	0	27	336
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	94	8	0	0	30	373
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	117	0	135
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	130	0	150
Percent Heavy Vehicles	0	0	0	2	0	2
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	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	94						280	
C (m) (vph)	1156						668	
v/c	0.08						0.42	
95% queue length	0.27						2.08	
Control Delay	8.4						14.2	
LOS	A						B	
Approach Delay	--	--				14.2		
Approach LOS	--	--				B		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	HUDSON VALLEY@AIRPORT/AVIATION
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	NOV. 2002	Analysis Year	01C879/TRAF/CBUWOAM
Analysis Time Period	2015 BUILD W/O IMP-AM PEAK		

Project Description: NEW YORK INTERNATIONAL PLAZA

East/West Street: AIRPORT CENTER DRIVE | North/South Street: HUDSON VALLEY AVE/AVIATION AVE

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	5	10	20	5	37	76
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	11	22	5	41	84
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	29	110	5	10	606	34
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	32	122	5	11	673	37
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	5	5		159			721	
C (m) (vph)	1462	1579		336			758	
v/c	0.00	0.00		0.47			0.95	
95% queue length	0.01	0.01		2.43			14.29	
Control Delay	7.5	7.3		25.0-			45.2	
LOS	A	A		C			E	
Approach Delay	--	--	25.0-			45.2		
Approach LOS	--	--	C			E		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	HUDSON VALLEY@AIRPORT/AVIATION
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	NOV. 2002	Analysis Year	01C879/TRAF/CBUWOPM
Analysis Time Period	2015 BUILD W/O IMP - PM PEAK		

Project Description: NEW YORK INTERNATIONAL PLAZA

East/West Street: AIRPORT CENTER DRIVE | North/South Street: HUDSON VALLEY AVE/AVIATION AVE

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	5	41	34	5	18	475
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	45	37	5	20	527
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	27	541	5	28	171	26
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	30	601	5	31	190	28
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	5	5		636			249	
C (m) (vph)	1022	1515		393			0	
v/c	0.00	0.00		1.62				
95% queue length	0.01	0.01		36.85				
Control Delay	8.5	7.4		314.6				
LOS	A	A		F			F	
Approach Delay	--	--	314.6					
Approach LOS	--	--	F					

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2015 FULL BUILD
WITH IMPROVEMENTS

SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT ROUTE 300
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD W/IMP-AM PEAK	Analysis Year	01C879/LBUWIAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	1	0	0	0	2	0	1
Lane group	L	T			T	R				L		R
Volume (vph)	431	470			497	615				865		373
% Heavy veh	2	2			2	2				2		2
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Actuated (P/A)	A	P			P	P				A		A
Startup lost time	2.0	2.0			2.0	2.0				2.0		2.0
Ext. eff. green	2.0	2.0			2.0	2.0				2.0		2.0
Arrival type	3	3			3	3				3		3
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		95	0			0		25
Lane Width	12.0	12.0			12.0	12.0				12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr	0	0			0	0				0		0
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0

Phasing	EB Only	EW Perm	03	04	SB Only	06	07	08
Timing	G = 24.0	G = 32.0	G =	G =	G = 30.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 101.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	479	522			552	578				961		387
Lane group cap.	509	1125			590	1050				1020		925
v/c ratio	0.94	0.46			0.94	0.55				0.94		0.42
Green ratio	0.60	0.60			0.32	0.66				0.30		0.58
Unif. delay d1	27.4	11.0			33.5	9.0				34.7		11.6
Delay factor k	0.45	0.50			0.50	0.50				0.45		0.11
Increm. delay d2	25.9	1.4			24.2	2.1				16.1		0.3
PF factor	1.000	1.000			1.000	1.000				1.000		1.000
Control delay	53.3	12.4			57.7	11.1				50.8		11.9
Lane group LOS	D	B			E	B				D		B
Apprch. delay	32.0			33.8						39.6		
Approach LOS	C			C						D		
Intersec. delay	35.5			Intersection LOS						D		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	ROUTE 207 AT ROUTE 300
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD W/IMP-PM PEAK	Analysis Year	01C879/LBUWIPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	0	1	1	0	0	0	2	0	1
Lane group	L	T			T	R				L		R
Volume (vph)	553	529			561	840				685		712
% Heavy veh	2	2			2	2				2		2
PHF	0.92	0.92			0.92	0.92				0.92		0.92
Actuated (P/A)	A	P			P	P				A		A
Startup lost time	2.0	2.0			2.0	2.0				2.0		2.0
Ext. eff. green	2.0	2.0			2.0	2.0				2.0		2.0
Arrival type	3	3			3	3				3		3
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume				0		0	0			0		0
Lane Width	12.0	12.0			12.0	12.0				12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N		N	N	0	N
Parking/hr												
Bus stops/hr	0	0			0	0				0		0
Unit Extension	3.0	3.0			3.0	3.0				3.0		3.0

Phasing	EB Only	EW Perm	03	04	SB Only	06	07	08
Timing	G = 35.0	G = 42.0	G =	G =	G = 28.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 120.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	601	575			610	913				745		774
Lane group cap.	623	1273			652	989				801		897
v/c ratio	0.96	0.45			0.94	0.92				0.93		0.86
Green ratio	0.68	0.68			0.35	0.63				0.23		0.57
Unif. delay d1	30.6	8.7			37.7	19.9				45.0		22.0
Delay factor k	0.47	0.50			0.50	0.50				0.45		0.39
Increm. delay d2	27.4	1.2			22.6	15.2				17.2		8.7
PF factor	1.000	1.000			1.000	1.000				1.000		1.000
Control delay	57.9	9.9			60.2	35.1				62.3		30.7
Lane group LOS	E	A			E	D				E		C
Apprch. delay	34.4			45.2						46.2		
Approach LOS	C			D						D		
Intersec. delay	42.6			Intersection LOS						D		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTER. BLVD @ WORLD TRADE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	SEPT. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - AM PEAK HOUR	Analysis Year	01C879/TRAF/EBUAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	0	1	1	0	0	1	0
Lane group	L	T	R	L	TR		L	LTR			LTR	
Volume (vph)	5	1657	413	10	484	5	262	5	9	5	5	5
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0		2.0	2.0			2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0		2.0	2.0			2.0	
Arrival type	3	3	3	4	4		3	3			3	
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0			12.0	
Parking/Grade/Parking	N	6	N	N	-6	N	N	2	N	N	2	N
Parking/hr												
Bus stops/hr	0	0	0	0	0		0	0			0	
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	

Phasing	EW Perm	02	03	04	SB Only	NB Only	07	08
Timing	G = 59.0	G =	G =	G =	G = 5.0	G = 11.0	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	6	1841	459	11	544		151	156			18	
Lane group cap.	532	2251	1280	85	2386		214	214			96	
v/c ratio	0.01	0.82	0.36	0.13	0.23		0.71	0.73			0.19	
Green ratio	0.66	0.66	0.83	0.66	0.66		0.12	0.12			0.06	
Unif. delay d1	5.4	11.5	1.8	5.8	6.3		37.9	38.1			40.6	
Delay factor k	0.11	0.36	0.11	0.11	0.11		0.27	0.29			0.11	
Increm. delay d2	0.0	2.5	0.2	0.7	0.0		10.1	11.9			0.9	
PF factor	1.000	1.000	1.000	0.420	0.420		1.000	1.000			1.000	
Control delay	5.4	14.0	2.0	3.1	2.7		48.1	50.0			41.5	
Lane group LOS	A	B	A	A	A		D	D			D	
Apprch. delay	11.6			2.7			49.0			41.5		
Approach LOS	B			A			D			D		
Intersec. delay	13.8			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTER. @ WORLD TRADE
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	DEC. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - PM PEAK HOUR	Analysis Year	01C879/TRAF/EBUPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	0	1	1	0	0	1	0
Lane group	L	T	R	L	TR		L	LTR			LTR	
Volume (vph)	5	930	338	10	1850	5	509	5	9	5	10	5
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0		2.0	2.0			2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0		2.0	2.0			2.0	
Arrival type	3	3	3	4	4		3	3			3	
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0			12.0	
Parking/Grade/Parking	N	6	N	N	-6	N	N	2	N	N	2	N
Parking/hr												
Bus stops/hr	0	0	0	0	0		0	0			0	
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	

Phasing	EW Perm	02	03	04	SB Only	NB Only	07	08
Timing	G = 59.0	G =	G =	G =	G = 4.0	G = 20.0	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 98.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	6	1033	376	11	2062		294	288			23	
Lane group cap.	73	2067	1317	256	2194		358	358			72	
v/c ratio	0.08	0.50	0.29	0.04	0.94		0.82	0.80			0.32	
Green ratio	0.60	0.60	0.86	0.60	0.60		0.20	0.20			0.04	
Unif. delay d1	8.2	11.1	1.3	8.0	17.9		37.3	37.1			45.7	
Delay factor k	0.11	0.11	0.11	0.11	0.45		0.36	0.35			0.11	
Increm. delay d2	0.5	0.2	0.1	0.1	8.8		14.2	12.6			2.6	
PF factor	1.000	1.000	1.000	0.570	0.570		1.000	1.000			1.000	
Control delay	8.6	11.3	1.4	4.6	19.0		51.5	49.7			48.2	
Lane group LOS	A	B	A	A	B		D	D			D	
Apprch. delay	8.7			18.9			50.6			48.2		
Approach LOS	A			B			D			D		
Intersec. delay	20.0			Intersection LOS						C		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@AVIATION
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	SEPT. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - AM PEAK HOUR	Analysis Year	01C879/TRAF/FBUAM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	1	1	0	0	1	0
Lane group	L	TR		L	TR		L	LTR			LTR	
Volume (vph)	77	759	749	5	215	1	206	3	5	8	2	49
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Arrival type	3	3		3	3		3	3			3	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0		11.0	12.0			12.0	
Parking/Grade/Parking	N	-6	N	N	6	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0			0	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0			3.0	

Phasing	EW Perm	02	03	04	NB Only	NS Perm	07	08
Timing	G = 55.0	G =	G =	G =	G = 12.0	G = 8.0	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	86	1675		6	240		115	123			65	
Lane group cap.	720	2103		82	2139		376	386			140	
v/c ratio	0.12	0.80		0.07	0.11		0.31	0.32			0.46	
Green ratio	0.61	0.61		0.61	0.61		0.28	0.28			0.09	
Unif. delay d1	7.3	13.3		7.1	7.3		25.4	25.8			39.0	
Delay factor k	0.11	0.34		0.11	0.11		0.11	0.11			0.11	
Increm. delay d2	0.1	2.2		0.4	0.0		0.5	0.5			2.4	
PF factor	1.000	1.000		1.000	1.000		1.000	1.000			1.000	
Control delay	7.4	15.5		7.5	7.3		25.8	26.2			41.4	
Lane group LOS	A	B		A	A		C	C			D	
Apprch. delay	15.1			7.3			26.0			41.4		
Approach LOS	B			A			C			D		
Intersec. delay	16.1			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	LAS	Intersection	INTERNATIONAL BLVD@AVIATION
Agency or Co.	BL COMPANIES	Area Type	All other areas
Date Performed	SEPT. 2002	Jurisdiction	NEW WINDSOR, NY
Time Period	2015 FULL BUILD - PM PEAK HOUR	Analysis Year	01C879/TRAF/FBUPM

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	1	1	0	0	1	0
Lane group	L	TR		L	TR		L	LTR			LTR	
Volume (vph)	80	550	271	5	588	1	1079	4	5	10	4	72
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Arrival type	3	3		3	3		3	3			3	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0		11.0	13.0			11.0	
Parking/Grade/Parking	N	-6	N	N	6	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0			0	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0			3.0	

Phasing	EW Perm	02	03	04	NB Only	NS Perm	07	08
Timing	G = 39.0	G =	G =	G =	G = 26.0	G = 10.0	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	89	912		6	654		600	609			95	
Lane group cap.	280	1531		163	1517		647	688			159	
v/c ratio	0.32	0.60		0.04	0.43		0.93	0.89			0.60	
Green ratio	0.43	0.43		0.43	0.43		0.46	0.46			0.11	
Unif. delay d1	16.8	19.5		14.7	17.8		20.9	22.4			38.1	
Delay factor k	0.11	0.18		0.11	0.11		0.44	0.41			0.19	
Increm. delay d2	0.7	0.6		0.1	0.2		19.7	13.2			6.1	
PF factor	1.000	1.000		1.000	1.000		1.000	1.000			1.000	
Control delay	17.4	20.1		14.8	18.0		40.6	35.5			44.1	
Lane group LOS	B	C		B	B		D	D			D	
Apprch. delay	19.9			17.9			38.0			44.1		
Approach LOS	B			B			D			D		
Intersec. delay	27.6			Intersection LOS						C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	HUDSON VALLEY@AIRPORT/AVIATION
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	SEPT. 2002	Analysis Year	01C879/TRAF/CBUAM
Analysis Time Period	2015 FULL BUILD - AM PEAK HOUR		

Project Description	NEW YORK INTERNATIONAL PLAZA
East/West Street: AIRPORT CENTER DRIVE	North/South Street: HUDSON VALLEY AVE/AVIATION AVE
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	29	110	5	10	606	34
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	32	122	5	11	673	37
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	37	0	5	10	20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	41	0	5	11	22
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT				LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR	LT				LTR	
v (vph)	32	11	46				38	
C (m) (vph)	889	1459	253				330	
v/c	0.04	0.01	0.18				0.12	
95% queue length	0.11	0.02	0.65				0.39	
Control Delay	9.2	7.5	22.4				17.3	
LOS	A	A	C				C	
Approach Delay	--	--	22.4			17.3		
Approach LOS	--	--	C			C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	HUDSON VALLEY@AIRPORT/AVIATION
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	SEPT. 2002	Analysis Year	01C879/TRAF/CBUPM
Analysis Time Period	2015 FULL BUILD - PM PEAK HOUR		

Project Description	NEW YORK INTERNATIONAL PLAZA
East/West Street: AIRPORT CENTER DRIVE	North/South Street: HUDSON VALLEY AVE/AVIATION AVE
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	27	541	5	28	171	26
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	30	601	5	31	190	28
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	18	0	5	41	34
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	20	0	5	45	37
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT				LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR	LT				LTR	
v (vph)	30	31	25				87	
C (m) (vph)	1352	972	228				349	
v/c	0.02	0.03	0.11				0.25	
95% queue length	0.07	0.10	0.36				0.97	
Control Delay	7.7	8.8	22.7				18.7	
LOS	A	A	C				C	
Approach Delay	--	--	22.7			18.7		
Approach LOS	--	--	C			C		

>

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	AIRPORT@BILL LARKIN/TOZZOLI
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	SEPT. 2002	Analysis Year	01C879/TRAF/BBUAM
Analysis Time Period	2015 FULL BUILD - AM PEAK HOUR		

Project Description NEW YORK INTERNATIONAL PLAZA

East/West Street: AIRPORT CENTER DRIVE | North/South Street: BILL LARKIN DR/TOZZOLI AVE

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	5	23	5	5	76	5
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	25	5	5	84	5
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12	5	5	160	89	34
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	13	5	5	177	98	37
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	5	5		23			312	
C (m) (vph)	1506	1583		732			812	
v/c	0.00	0.00		0.03			0.38	
95% queue length	0.01	0.01		0.10			1.82	
Control Delay	7.4	7.3		10.1			12.2	
LOS	A	A		B			B	
Approach Delay	--	--	10.1			12.2		
Approach LOS	--	--	B			B		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	LAS	Intersection	AIRPORT@BILL LARKIN/TOZZOLI
Agency/Co.	BL COMPANIES	Jurisdiction	NEW WINDSOR, NY
Date Performed	SEPT. 2002	Analysis Year	01C879/TRAF/BBUPM
Analysis Time Period	2015 FULL BUILD - PM PEAK HOUR		

Project Description NEW YORK INTERNATIONAL PLAZA

East/West Street: AIRPORT CENTER DRIVE | North/South Street: BILL LARKIN DR/TOZZOLI AVE

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	5	76	5	5	204	5
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	84	5	5	226	5
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	80	5	5	29	16	214
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	88	5	5	32	17	237
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	5	5		98			286	
C (m) (vph)	1337	1506		371			763	
v/c	0.00	0.00		0.26			0.37	
95% queue length	0.01	0.01		1.04			1.75	
Control Delay	7.7	7.4		18.2			12.5	
LOS	A	A		C			B	
Approach Delay	--	--	18.2			12.5		
Approach LOS	--	--	C			B		

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SUPPLEMENTAL TRAFFIC ASSESSMENT

For

GREENETRACK INC. AT NEW WINDSOR
New Windsor, New York

May, 2014

Prepared by:

Greenman-Pedersen, Inc.
Engineering and Construction Services

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1. EXECUTIVE SUMMARY

This traffic assessment has been prepared to ascertain potential traffic related impacts associated with the proposed ***Greenetrack Inc.*** project in New Windsor, New York. The project site is located just south of Stewart International Airport at the crossroads of International Boulevard and Breunig Road. The proposed project site is on land that was part of the previously approved New York International Plaza (NYIP) mixed-use land development A comprehensive traffic impact study was conducted for the NYIP Project in 2002. The purpose of this assessment is to determine whether the findings set forth in the NYIP traffic impact study are still applicable within the context of present background traffic conditions, projected development that has not occurred at the NYIP site and other more recent traffic studies associated with recently completed and proposed development projects within the study area.

A casino resort with a hotel tower, retail space, entertainment venues, and a conference center, as well as a free-standing shopping center, would be constructed at the project site. The project will also include a total of 3680 car parking spaces for its patrons and employees. The casino hotel resort development will be 12 to 14-story high situated with surface and garage parking area on this overall 145 acre site. The proposed site will have two site-access driveways and two service driveways. Traffic access at the all proposed driveways along International Boulevard and along Breunig Road will allow all possible vehicular turning movements to and from the project site with the possibility of traffic signal installation. The project is anticipated to obtain a casino permit in 2014.

The objective of this traffic assessment was to determine if the traffic impact study for the NYIP site can be used as a basis for evaluating the traffic operations for the proposed casino development. This will be done by verifying that the 2015 No-Build background traffic volumes from the NYIP study are still representative of expected traffic volumes in 2015, reviewing traffic generated by the NYIP development that have been constructed to date and comparing the 2015 Build Volumes from the NYIP study to expected 2015 Build Traffic Volumes for the casino development. The findings of the comprehensive traffic assessment are as follows:

- Four (4) key roadway segments within the immediate vicinity of the project site that will be subjected to maximum project generated traffic activity on a daily basis were analyzed for this traffic study. Annual background traffic growth rates were obtained from the NYSDOT Traffic Volume Report. Background traffic growth rates that were used to assess traffic operations along these four key roadway segments for the future no-build and build traffic assessments are as follows:
    - Route 300: -2.74%
    - Route 207: -1.58%
    - Route 747: -0.21%
    - Route 17K: -0.18%

- The traffic assessment reviewed two time periods: the weekday PM (4:00 pm - 5:00 pm) and the Saturday (2:00 pm – 3:00 pm) peak traffic hours. Based on New York State Department of Transportation Traffic Volume Report, these are the typical time periods when background traffic activity is expected to be at its highest.

- Existing traffic volumes from NYSDOT continuous count stations were compared to those forecast as the 2015 background no-build volumes presented in the 2002 study. As shown in Chart 1 below, the current traffic volumes are significantly less than the 2015 projected background volumes that were depicted in the 2002 NYIP Traffic Study. Since the more conservative numbers were used for the Traffic Assessment, this will more than account for any anticipated growth due to other developments in the near term along Route 207. Therefore the 2015 background no-build volumes that were projected in the NYIP Traffic Impact Study represent a conservative baseline and are suitable for use in the Greenetrack traffic assessment for the build condition analysis.

CHART 1

Traffic Volume Comparison for Weekday PM Peak Period: (NYIP Study vs. NYSDOT Traffic Data)

2015 Background Volume Comparison between New York International Plaza Traffic Impact Study (2002) and NYSDOT Traffic Data Volume Record (2012)

Intersections	Route 207 at East of Route 747	Route 207 at East of Breunig Road	Route 207 at East of Route 300
2015 Background Traffic Volume* (Veh/Hr) on Route 207	1112	1680	2460
Decrease in traffic Growth on Route 207** (Veh/Hr)	15.01%	15.01%	15.01%
Newly Anticipated Volumes on Route 207 in 2015***(Veh/Hr)	945	1428	2091
Difference in Anticipated Volumes between 2002 NYIP Traffic Impact Study vs. 2015 NYSDOT Anticipated Projection Rates***	167	252	369

*2015 Projected background volumes from the New York International Plaza at New Windsor Traffic Impact Study done in 2002

**2015 Traffic growth extrapolated using rates based on NYS DOT 2012 Traffic Data Volume Report (-1.58% annual traffic decrease/year over 9.5 years)

***Difference is calculated using 2015 extrapolated volumes

- The project generated vehicular trips for the proposed casino resort were derived from *Trip Generation Characteristics of Small to Medium Sized Casinos by Michael Trueblood, Tara Gude.* This publication represents the <u>most conservative trip generation volume projections</u> based on a comparison of a dozen casino-related trip generation studies. It should be noted that if the average was taken of all sites observed rather than the highest trip generation rate, we would expect 658 fewer peak hour trips.

The project generated vehicular trips for the proposed adjacent free-standing shopping center were derived from Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition) using the ITE formula calculation. The trip generation calculations were conservatively based on the *shopping center* land use (Land Use 820). The retail will generally consist of upscale shops that are focused on the casino customer. Thus, the traffic impact

assessments conducted for this study are conservative and provide the upper limit of expected traffic.

- According to the future trip generation assessment, the proposed project would generate the following peak hour vehicular trips:
  - 2619 vehicular trips (1353 inbound, 1266 outbound) during the weekday PM peak hour between 4:00 pm and 5:00 pm, and
  - 3022 vehicular trips (1597 inbound, 1425 outbound) during the Saturday peak hour between 2:00 pm and 3:00 pm

  Please note that the casino peak generation on a Saturday is expected to occur later in the day. However, in order to be conservative it was assumed that the casino peak hour occurred at the same time as the current Saturday background peak hour.

- Based on a published tracking sheet dated in 2007, approximately 950,000 square-feet of the proposed 2.5 million square-foot NYIP development has been constructed and in operation. Trips generated from these developments have been accounted for in the expected background growth as confirmed by the data from NYSDOT continuous count stations when compared to the 2015 background no-build volumes. The original anticipated trip generation projections set forth in the NYIP development in the 2002 traffic study can be considered as still available for future trips generated by the proposed casino project as well as other future developments on undeveloped land parcels in the project area.

- The Greenetrack Development will occupy remaining undeveloped parcels of the NYIP. These parcels were planned for the construction of 1,451,700 sf of mixed use development. As noted above, the original NYIP development was approved for 2.5 million sf. Therefore, approximately 100,000 sf (2,500,000 – 950,000 – 1,451,700) could be developed. The trips for these remaining parcels are accounted for in trip generation calculations.

- The 2015 full-build condition originally analyzed for the NYIP development is applicable for this project because anticipated traffic generation associated with the project does not exceed trip projections used for the NYIP 2015 full-build condition.

- A significant off-site intersection within the project study area from a capacity stand-point will be Route 207 at Route 300. At this intersection the inbound and outbound traffic patterns are anticipated to be altered due to the difference between previously proposed NYIP land uses and the proposed casino development. However, the intersection will only see an increase of

2% in total volume. Signal timing modifications would be able to accommodate these increased volumes without significant impacts in traffic operations at this intersection.

- Major Transportation improvements that were noted in the NYIP report have been completed and provide needed roadway capacity for this development. They include:
  - Providing direct access from I-87 to I-84
  - Constructing a new interchange along I-84 at Route 747 (Drury Lane)
  - Reconstructing Route 747 to provide two lanes in each direction between I-84 and International Boulevard.
  - Constructing International Boulevard between Route 747 and World Trade Way

- Additional follow-up off-site improvements are also being proposed as part of the casino and retail development project in order to improve internal traffic circulation

  - Intersections:
    - At the International Boulevard and new Main Site Entrance removal of the existing raised median and construction of dedicated turn lanes. All work shall conform to NYSDOT Standards.
    - Accessible routes shall be designed to maintain longitudinal and cross slopes that comply with A.D.A. requirements. Sidewalk width shall be a minimum of 5 ft. ADA compliant ramps and detectible warning strips shall be placed at all curb cuts. Structures shall be in accordance with MAG Standard Details and Specifications. All ADA sidewalks shall conform to NYSDOT Standards.

  - Pavement Resurfacing consisting of production profiling cold place milling on Sue Kelly Avenue and Aviation Avenue to accommodate service vehicles and motor coaches. Improvements will include milling to a depth of 2 inches and placement of surface course asphalt to a depth of 2 inches. All work shall conform to NYSDOT Standard Specifications for Materials and Construction.

  - Modifications to existing pavement striping to create a left turn lane at the secondary site entrance on Breunig Road. Pavement Markings shall conform to MUTCD standards as revised by NYSDOT.

- Greenetrack recognizes the existing traffic operation issues on NY Route 207 between the Breunig Road and NY Route 300 intersections. Greenetrack would participate in funding minor intersection improvements at these intersections to accommodate left turns and enhance

the through movement of traffic in this corridor. These minor intersection improvements would consist of construction of dedicated turn lanes as well as installation of traffic signals as warranted. Intersection improvements would include the following:

- NY Route 207 at NY Route 300- Extend the existing dedicated right turn lane on the westbound NY Route 300 approach.
- NY Route 207 at NY Route 300- The town of New Windsor is presently developing a project to extend the existing dedicated left turn lane on the eastbound NY Route 207 approach. The turn lane would be extended to the west past the intersection of Moores Hill Road. Greenetrack would participate in the construction of this improvement.
- NY Route 207 at Square Hill Road and Weather Oak Hull Road- Greenetrack will participate in evaluation of potential intersection improvements at these intersections. Improvements would include re-alignment of these offset intersections with a traffic signal.
- NY Route 207 at Breunig Road- Extend the existing dedicated right turn lane on the westbound NY Route 207 approach to the retail strip mall. Widen northbound Breunig Road to provide a second lane to meet the existing four lane section.

The scope and location of these improvements would be refined further as part of site plan review.

In summary, the traffic assessment conducted for the proposed Greenetrack, Inc. at New Windsor project has indicated that the proposal could be feasibly implemented without creating any unmitigatable or significant traffic impacts to the surrounding roadway network.

2. INTRODUCTION

A supplemental traffic assessment has been conducted in order to demonstrate potential traffic impacts that will result from a proposed casino and retail development by Greenetrack Inc. in New Windsor, New York. The project is to be located just south of Stewart International Airport in Orange County along International Boulevard to the North and Breunig Road to the East. Both roadways serve as access roads to the Stewart International Airport. The casino site will also be bounded by Avenue of Americas to the East, Airport Center Drive to the South, and Raz Avenue to the West.

The project site is part of a prior proposed mixed use land development project, known as the New York International Plaza (NYIP). The NYIP development had 11 distinct land use components (medical office, production/warehouse, offices, restaurants, research and development, retail, convention centers and hotels, housing, service stations, education), which to some degree have materialized as of 2014. However, the site remains sparsely developed from the previously approved land uses. Without commencing a new traffic study and data collection effort, this supplemental

traffic assessment will utilize the previously conducted 2002 NYIP traffic study of the mixed land use development. The NYIP Traffic Impact Study assessed potential impacts associated with a total full build development of 2.5 million square feet. That development was issued a negative declaration in 2003 by the Town of New Windsor. As a result, this supplemental traffic study is being prepared to demonstrate that traffic impacts anticipated by the proposed casino land use are less than or essentially the same as those already accounted for in the 2002 study.

The proposed new casino resort will include the following amenities:

- ***Casino Component:*** A casino resort will house the following facilities.
  - 3,600 gaming positions for slot machines and gaming tables
  - A 12-to-14-story hotel tower with 350 guestrooms and amenities, such as business center, spa and fitness space
  - Multiple entertainment venues, such as event center/theater (2,200 seat capacity), bar, jazz lounge, dance club, movie theater, wine cellar and cigar bar
  - Conference center facilities
  - Parking facilities, including a multi-story parking garage, covered valet parking and surface parking lots would accommodate approximately 3680 spaces
- ***Retail Component:*** Potential future development of a shopping center with 140,000 square feet of area which will be directly connected to the casino by a pedestrian bridge in addition to its own access.

See Figure 1 for the Conceptual Site Layout provided by Greenetrack, Inc.

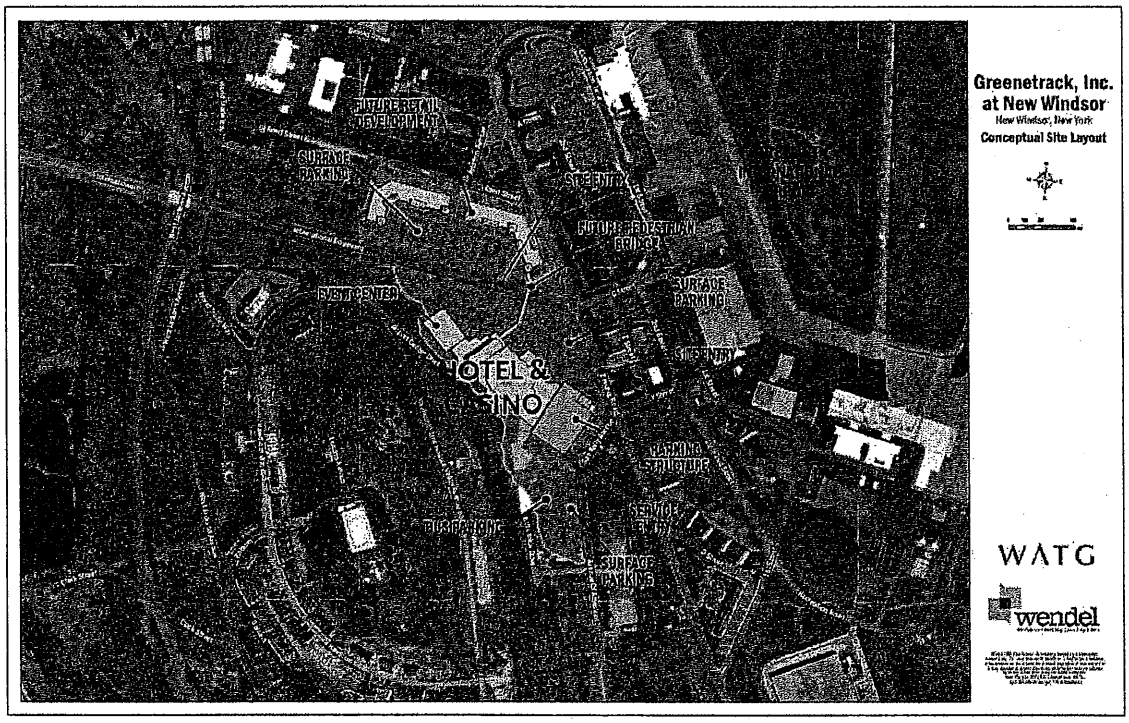

Figure 1: Conceptual Site Layout

The NYIP project utilized Route 747, Route 207, and Route 300 as local access roads from two major interstate highways, I-84 and I-87. The primary purpose of this assessment is to investigate whether the traffic impacts of Greenetrack Inc. Casino Project are:

- Already accounted for in the 2002 NYIP traffic study and are still relevant and can be mitigated by the previously proposed mitigation measures (Note: Major land use components of the mixed-land use proposal were not implemented),
- Anticipated traffic impacts are insignificant and will not impact traffic operations, or
- Anticipated significant traffic operational impacts would be mitigated by recommending new improvement measures.

This traffic assessment will be focused on the Weekday PM peak hour. Significantly more traffic will be generated by the proposed casino land use during the Peak PM commuter period than the AM peak hour when casino operations are minimal. Additionally, a comparison also will be conducted between the Weekday PM Peak volumes and the weekend peak hour volume, as the casino is expected to generate more weekend trips.

ROADWAY NETWORK AND LAND USE

Roadway Network:

Both I-84 and I-87 Interstate Highways are multi-lane roadways located within two miles of the proposed project site with access ramps within the immediate vicinity. It is anticipated that the majority of the casino patrons will reach the casino using these highways via the following local roadways and arterial corridors.

1. International Boulevard
2. Breunig Road
3. Route 747 (Drury Road)
4. Route 207 (Little Britain Road)
5. Route 300 (Union Avenue)

International Boulevard is a four-lane two-way roadway, operating with two travel lanes in each direction. This roadway runs in an east-west direction and connects to Stewart International Airport on the East and Route 747 on the West. The roadway is approximately 65' wide. This is a divided roadway separated by a planted center median with concrete curb between World Trade Way and Breunig Road with left turn bays at Aviation Avenue and has a posted speed limit of 30 mph near the project site. Elsewhere, the roadway is separated by yellow hatched channelized pavement marking of varying width and has a posted speed limit of 35 mph. On the eastbound approach to World Trade Way, a left turn bay is provided. During a typical weekday, the PM peak hour traffic volume on International Boulevard within the project's vicinity ranges between 322 and 385 vehicles.[1]

[1] New York State Department of Transportation (NYSDOT) Traffic Count Hourly Report at Continuous Count (CC) Station 831343 (2010)

Breunig Road runs north-south from Brooks Street on the North to Route 207 on the South. Breunig Road is approximately 35' wide and has a posted speed limit of 30 mph. This is an undivided roadway with one northbound travel lane and two southbound travel lanes between Brooks Street and International Boulevard and south of D Street to its southern terminus, Route 207. Breunig Road between International Boulevard and D Street operates with a northbound travel lane, a southbound travel lane, and a middle travel lane that converts into a two way left turn lane and/or a left turn bays at key locations. During a typical weekday, the PM peak hour traffic volume on this roadway within the project's vicinity ranges between 289 and 307 vehicles.[2]

Route 747 (Drury Road) is a four-lane two-way roadway, operating with two travel lanes in each direction between I-84 westbound ramps and International Boulevard with either yellow hatched channelized center median or planted center median with concrete curb, which at key intersections opens up to left and/or right turn bays. During a typical weekday, the PM peak hour traffic volume on this roadway between I-84 and International Boulevard ranges between 1047 and 1212 vehicles.[3] Route 747 is a two-lane, two-way roadway, operating with one travel lane in each direction between International Boulevard and Route 207. During a typical weekday, the PM peak hour traffic volume on this roadway segment between Route 207 and International Boulevard ranges between 747 and 863 vehicles.[4] Route 747 is varying in width and has a posted speed limit of 55 mph.

Route 207 (Little Britain Road) is an undivided two-lane, two-way roadway operating with one travel lane in each direction within the study area. This roadway has varying width and has a posted speed limit of 40 mph. During a typical weekday, the PM peak hour traffic volume on this roadway within the project's vicinity ranges between 1499 and 1528 vehicles.[5]

Route 300 (Union Avenue) is an undivided four-lane, two-way roadway, operating with two travel lanes in each direction and a two way left turn lane, within the study area. This roadway has varying width and has a posted speed limit of 45 mph. During a typical weekday, the PM peak hour traffic volume on this roadway within the project's vicinity ranges between 2519 and 2854 vehicles.[6]

A map of the above noted roadway network is presented on Figure 2 - Project Location Map. These roadways will be affected most by traffic generated from the proposed the Greenetrack Inc. Casino and Resort development. Thus, it is important to assess and compare the traffic volume projections on these roadways between the previously conducted 2002 NYIP traffic study and the subject proposal, in order to determine the potential of any significant traffic impacts (pattern or growth rate changes) and the need for additional traffic mitigation.

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[2] NYSDOT Traffic Count Hourly Report at CC Station 831342 (2009)
[3] NYSDOT Traffic Count Hourly Report at CC Station 830041 (2011)
[4] NYSDOT Traffic Count Hourly Report at CC Station 830003 (2011)
[5] NYSDOT Traffic Count Hourly Report at CC Station 830050 (2011)
[6] NYSDOT Traffic Count Hourly Report at CC Station 830078 (2011)

Land Use:

The proposed project site is currently comprised of empty lots and facilities that support U.S. Army Reserve. The existing land use for the study area, which is adjacent to Stewart International Airport, is sparsely occupied by hotels, commercial buildings, single-family residences, and other U.S. Army Reserve support facilities. Retail and restaurant developments are located along the surrounding arterials, Route 207 and Route 300. Public transit options are very limited in the vicinity and motor vehicle is the most common mode of transportation.

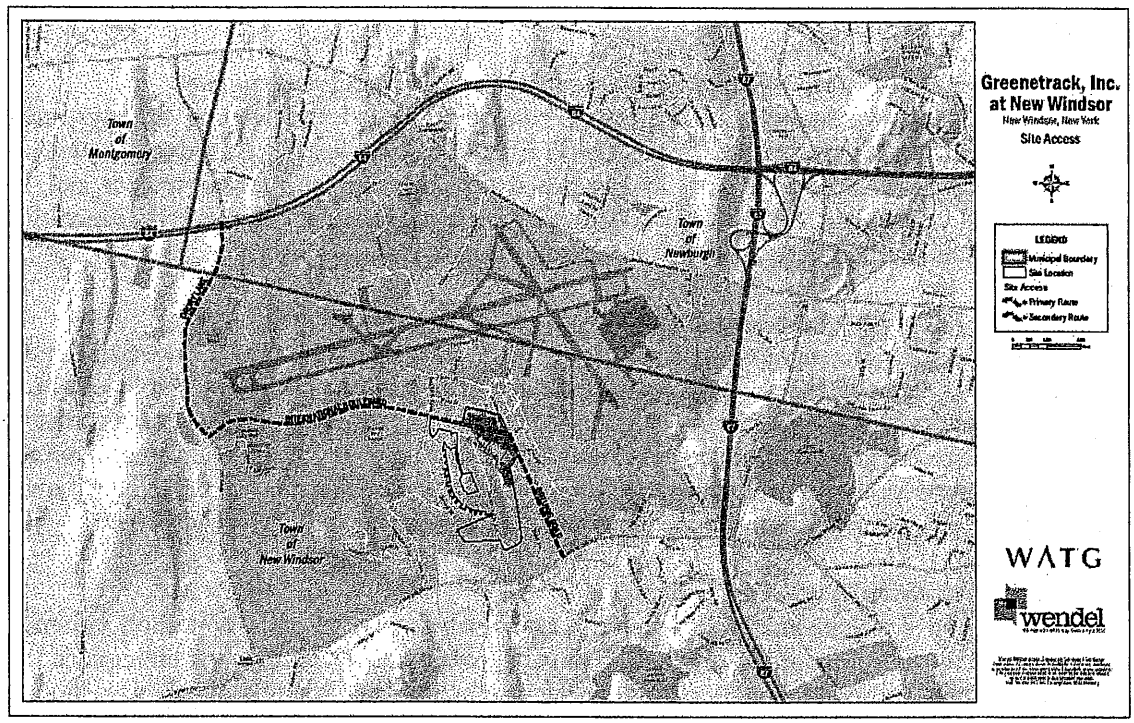


Figure 2: Project Location Map

PROJECT METHODOLOGY

The methodologies used in conducting the supplemental traffic impact assessment includes the following key steps:

Step 1: Background No-Build Condition Traffic Volume Assessment (2015)

A comprehensive search was conducted to compile the latest available traffic data from web-based sources (NYSDOT, Towns) and traffic studies within the project study area in order to determine the volume trends that can be used in assessing the traffic growth pattern within the project study area. This measure assisted in determining the relevancy of the projected 2015 background traffic volumes from 2002 NYIP traffic study as compared to recent available traffic data.

Step 2: Forecast Project Trip Generation (new casino resort + retail component)

A comprehensive research of previously conducted casino and gaming facility traffic studies and Institute of Transportation Engineers (ITE) Publications was performed to estimate the future trip generation associated with the proposed Greenetrack Inc. casino project and its associated retail component. This was used to verify the reasonableness of the Trip Generation estimate presented in the Environmental Assessment Form for this proposal.

Step 3: Traffic Distribution & Assignments

Based on the field survey/assessment to confirm that the roadway network used for the 2002 NYIP Traffic Study has been constructed and the casino market area analysis, the peak hour traffic volume assignment patterns were developed to determine the most likely route that will be utilized by the project generated traffic. It is anticipated that key market segments that have the potential to attract casino trips predominately will include New York South (which includes Lower Hudson Valley counties), Western Connecticut and New Jersey.

Step 4: Build Condition Traffic Assessment

The casino development build condition was analyzed. The build condition volumes, which were obtained by combining adjusted 2015 background traffic volumes and anticipated trip generation, and the full build condition volumes from the 2002 NYIP study under its previously projected 2015 Build Condition was compared to assess the potential traffic impacts.

Step 5: Mitigation Requirements Assessment

Based on volume comparisons in Step 4, Build Condition Traffic Assessment, mitigation commitments made for intersections and roadway segments as part of the 2002 NYIP traffic study will be reviewed for their relevance. The assessment will then determine whether previously proposed mitigation measures would be effective in minimizing impacts, if any, that result from the proposed Greenetrack Inc. casino project. If and where necessary, new mitigation measures will be recommended.

SITE INVENTORY

The GPI staff conducted a site inventory to confirm traffic operating patterns and obtain data such as intersection geometry, intersection controls, lane configuration, posted speed limits, signal timing information. This field inventory was also conducted to confirm that mitigation measures that were depicted in the 2002 NYIP traffic study were implemented. In addition to roadway inventory, land use inventory within project area was also conducted in order to identify the developments that were constructed between the 2002 study and today. This inventory will be helpful when assessing the mitigation requirements if traffic volume comparisons show a significant change in the area background growth or higher than the anticipated traffic volumes resulting from the construction of the proposed casino project, instead of the previously approved mixed land use development.

3. BACKGROUND NO-BUILD CONDITION TRAFFIC VOLUME ASSESSMENT (2015)

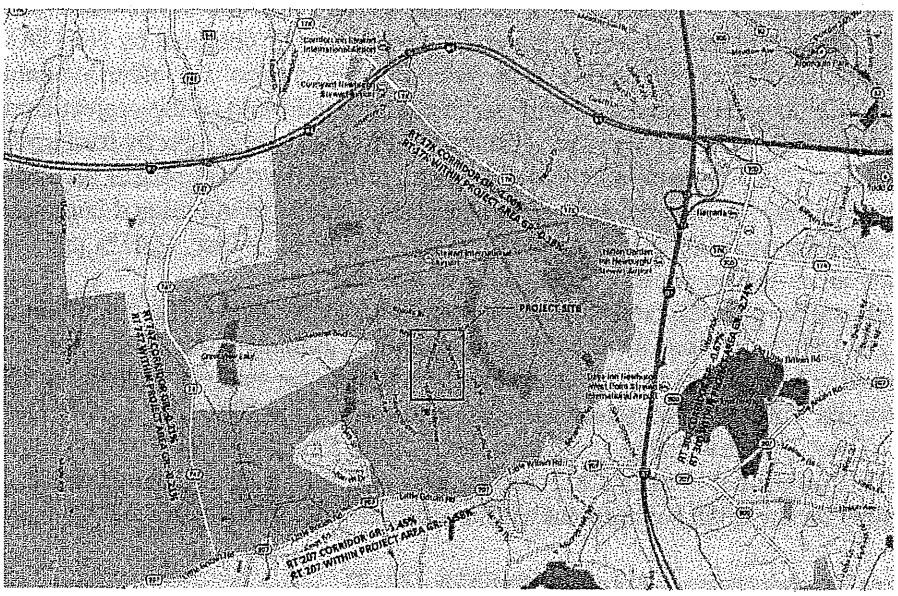
In order to validate the findings of the original 2002 NYIP traffic study of a mixed use development so they can be used as a surrogate for the proposed Casino project, traffic volumes projected for the baseline year of 2015 were evaluated. For this purpose, readily available traffic data was obtained from the NYSDOT website and the 2012 Newburgh Area Transportation & Land Use (TLU) Study. This section of the report depicts the findings of this traffic volume comparison.

Extrapolation of Traffic Data to 2015 Background Comparison

The NYSDOT traffic data obtained from its official website contains data from different years and applying growth factors are necessary to ensure the integrity of the data used for a 2015 background comparison. The most recent traffic data obtained in 2012 and traffic data closest to 2002, if available, were used to approximate growth rates that reasonably represent the no-build condition for the study area. For each key corridor, an average growth rate within Orange County and one within the immediate study area were calculated using traffic data from NYSDOT Traffic Volume Report and are presented in the Appendix A.

The growth rates are important in two ways. They are necessary for traffic volume extrapolation for the 2015 background comparison. They also show that the growth rates within the county and study area are consistent. Traffic volumes exhibited a gradual decrease based on the growth rate per year calculated at each CC station as well as the overall area. These negative growth rates were applied to most recent PM peak volumes from NYSDOT, to calculate the volumes used for the 2015 no-build condition comparison. The NYSDOT PM peak volumes were obtained from Traffic Count Hourly Reports and are presented in the Appendix B.

See Figure 3 for NYSDOT Traffic Growth Rate Map. See Appendix C for the NYSDOT Traffic Growth Rates.



NOTES:
1. TRAFFIC VOLUMES USED IN THIS COMPARISON STUDY ARE FROM NEW YORK STATE DEPT OF TRANSPORTATION (NYSDOT) 2012 TRAFFIC VOLUME REPORT. GROWTH RATES ARE CALCULATED USING CURRENT VOLUMES (2012 DATA) AND HISTORIC VALUES (DATA FROM YEARS RANGING 2000TO 2011). REFER TO APPENDIX E FOR DETAILS.

LEGEND:
GR GROWTH RATE IN TRAFFIC VOLUME

NYSDOT TRAFFIC GROWTH RATE MAP		
GREENETRACK INC. AT NEW WINDSOR INTERNATIONAL BLVD. AT BREUNIG ROAD NEW WINDSOR, NEW YORK		
GPI GREENMAN-PEDERSEN INC. Engineers Planners Environmental Engineers & Scientists	REVISION DATE 04/23/2014	FIGURE NO.

Figure 3: NYSDOT Traffic Growth Rate Map

2015 Background Traffic Volumes (Typical Weekday PM Peak Hour)

The 2002 study for the NYIP mixed-use development shows projected 2015 background traffic volumes for the project site provided by BL Companies. Based on research, three sets of contemporary relevant data were used to verify the validity of 2002 study and are described below.

1. NYSDOT Traffic Count Hourly Report
   The NYSDOT collects traffic data at various continuous count stations throughout the state of New York on a yearly basis. This data is evaluated by the NYSDOT and presented in a report format document depicting Average Annual Daily Traffic (AADT) on a yearly basis. From this report, traffic data on four corridors (Route 207, Route 300, Route 17K, and Route 747) is available for this data validity comparison. Additionally, along these corridors traffic data is also available at 9 continuous count stations in the immediate vicinity of the Casino project study area. The most recent AADT obtained by NYSDOT is for 2012. This latest available AADT data was compared against the older available AADT data in order to determine the annual traffic background trend of the project study area as well as the traffic growth along the various corridors that would directly lead traffic into the study area. This comparison showed a negative traffic growth within the study area and in this corridor in Orange County. The negative traffic growth ranged between -0.21% and -1.45% per year along the corridors and between -0.21% and -2.45% per year within the study area. For example: On Route 207 there is a
   -1.58% annual traffic growth rate within the project study area. This amounts to approximately a 15% reduction in the background traffic volumes when comparing the 2002 background volume to the 2015 background traffic volumes in the NYIP study. See Appendix D for the Volume Comparison for PM Peak Period - NYIP Study vs. NYSDOT Traffic Data. Thus, it is reasonable to assume that the 2015 background traffic volumes provided by BL Companies in their 2002 traffic study will represent conservative traffic volume estimates for the 2015 background traffic volumes.

2. Newburgh Area Transportation and Land Use Study (2012)
   The Orange County Transportation Council commissioned a study to identify key priorities for creating integrated solutions for transportation and land use within the northeastern part of Orange County, which includes New Windsor and the proposed development site. A set of 18 key intersections in Newburgh Area were selected for assessing the potential effects of different development scenarios, three of which are within our study area. The Existing Condition PM peak hour counts depicted on Table 4-7 of the Newburgh Report are for the year 2010. The growth rate depicted for the study area from the AADT counts (noted above) were applied to these 2010 counts to obtain the 2015 projected PM peak hour traffic volumes in order to compare it with the volumes that were forecasted in the 2002 traffic study for the 2015 background conditions. For two of the three intersections compared under this exercise, the background no-build volumes from the 2002 study were found to be higher than the recent traffic volumes projected from the 2012 study data. For the remaining intersection, the background no-build volume is only 1% higher than the recent traffic volumes. See Appendix D for Traffic Volume Comparison for PM Peak Period: (NYIP Study vs. Newburgh Area Study). This assessment again indicates a lack

of positive background traffic growth in the project study area when compared with the traffic projections between various available sources.

3. Data from Other Traffic Studies within Project Vicinity
Among four readily available traffic studies within the project study area, one was found to be applicable for volume comparison purposes as one intersection was shared between the study and our project study area. Crystal Run Healthcare project is a proposed medical office building with approximately 65,000 square-foot located on Route 300 in Newburgh. It is planned to be built in 2014 and anticipated to be completed in 2015. Existing and Site Generated Traffic Volume Figures prepared by another consultant are presented in Appendix E. For our comparison, 2013 existing traffic volumes for weekday PM peak hour are used and the project generated volume is added to represent the anticipated 2015 volume. It should be noted that in order to be conservative, no negative background growth (shown in the above comparisons) was applied. Traffic volumes anticipated from the Crystal Run Healthcare project at the intersection of Route 207 and Route 300 are found to be 2% lower than the 2015 background volume projected in the 2002 NYIP study. See Appendix D for Traffic Volume Comparison for PM Peak Period: (NYIP Study vs. Crystal Run Healthcare Study)

2015 Background Traffic Volumes (Typical Saturday Peak Hour)

Casino and retail shopping center land uses will likely generate higher traffic volumes during typical weekends (especially Saturdays), compared to typical weekdays. Thus, it was important to determine the difference in traffic volume that presently utilizes surrounding roadways during typical weekday PM peak hours and during typical weekend peak hours in order to conduct a reasonable traffic assessment. Even though no traffic data was presented for the weekend peak hours in the 2002 NYIP traffic study, GPI was able to conduct this comparison from the available NYSDOT data. A review of NYSDOT data showed that traffic volumes during the Saturday peak hour is significantly lower than volumes during a typical weekday PM peak hour at the following two key roadways within the project area.

- Breunig Road between Route 207 and International Boulevard: -23%
- International Boulevard between Route 747 and Breunig Road: -53%

See Appendix F for Traffic Volume Comparison between weekday PM peak hour and Saturday peak hour.

A comparison of three independent sources of traffic volumes confirmed that there is a decrease in annual traffic growth within project study area. Similarly, Saturday peak hour traffic is significantly lower than the typical weekday PM peak hour traffic operations associated with commuters. However, rather than decreasing the traffic volumes depicted in the 2002 study for the 2015 Baseline/No-build conditions, we will take a conservative approach for this supplemental traffic impact assessment and utilize the data as presented in the 2002 report for the Weekday PM peak hour volumes. See Figure 4 for NYIP 2015 Background Traffic Volumes.

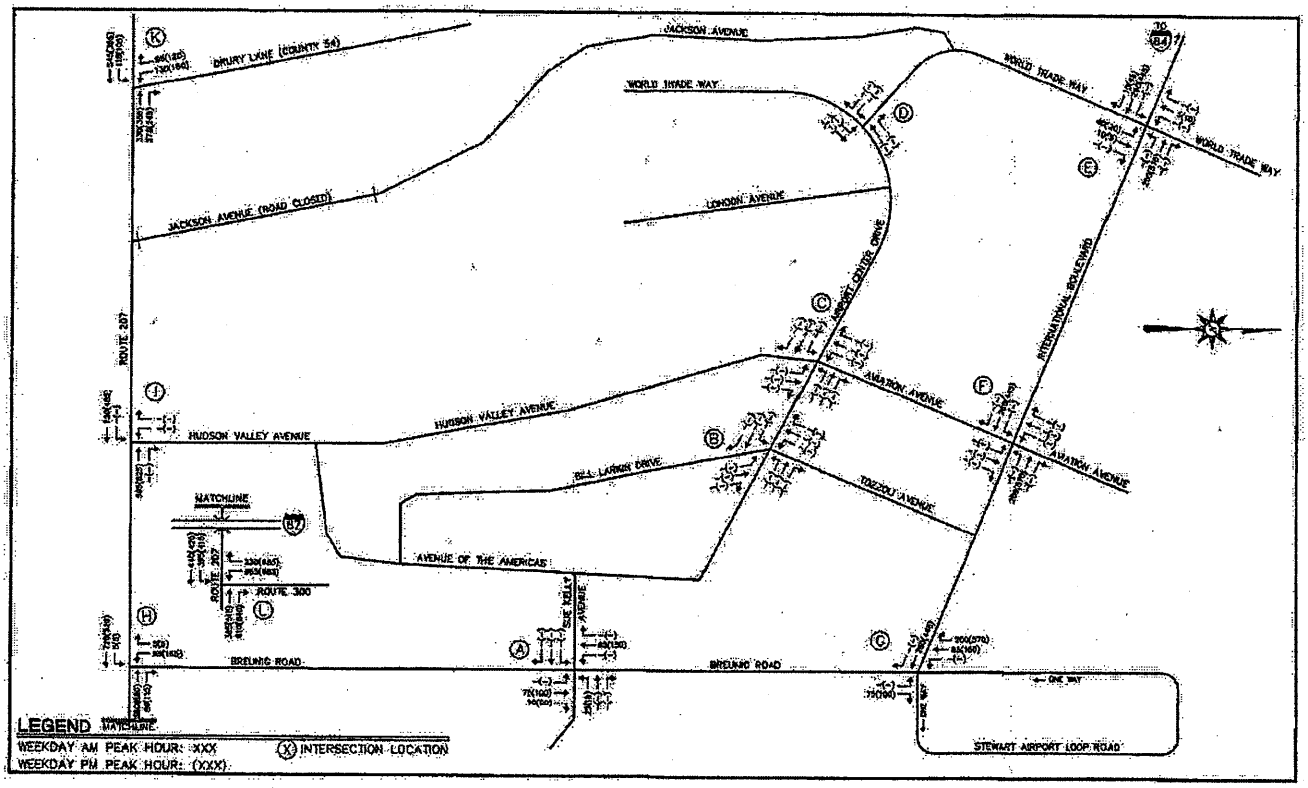


Figure 4: New York International Plaza 2015 Background Traffic Volumes (2002 NYIP Traffic Study)

4. TRIP GENERATION REVIEW

Estimation of the future Build traffic condition is one of the most critical elements in the preparation of a traffic impact study. Under this task, a determination is made on the estimated number of trips being generated by the proposed project. This enables assessment of the impacts associated with the new trips that would be added to the surrounding roadways resulting from the project's construction. For this traffic assessment, traffic will be generated from the proposed project land use (Casino Development and Shopping Center) and will be compared against the traffic generated by the previously proposed land uses (mixed-use land development comprising of 11 distinct land use components - medical office, production/warehouse, offices, restaurants, research and development, retail, convention centers and hotels, housing, service stations, education). GPI's data search and field inventory has indicated that 951,000 square feet of the approved 2,500,000 sf development noted in the original 2002 NYIP traffic study are already constructed and operational.[7] However, with the identified negative background traffic growth within the study area, the trips that have been generated by NYIP have not resulted in an increase in traffic on the surrounding road network. Therefore, those trips already generated are accounted for in the background traffic volume estimate in the 2002 NYIP traffic study for the year 2015.

The vehicle trips were generated for a typical Friday PM peak hour and weekend (Saturday) peak hour as follows. These overall project generated trips are presented on Tables 1 and 2.

[7] New York International Plaza Use Tracking Sheet dated 1/09/2007 prepared by First Columbia International Group, L.L.C.

Table 1: Peak Hour Project Generated Trips for Build Condition for Friday PM Peak Hour

PEAK HOUR PROJECT GENERATED TRIPS FOR BUILD OUT CONDITION					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Casino** *Traffic derived from St. Louis casinos Person Trip Rates*	*3,600 Gaming Position*	*0.590*	52.5% 1115	47.5% 1009
2	**Shopping Center** *ITE Land Use:820*	*140,000 Square Ft.*	5.360	48.0% 360	52.0% 390
1	*Multi-use Site Internal Capture Between Casino and Shopping Center*		*34%*	-122	-133
2	*Passer-By Credits for Casino Trips*		*0%*	0	0
PROJECT GENERATED VEHICULAR TRIPS				1353	1266
TOTAL PROJECT GENERATED VEHICULAR TRIPS				2619	

Reference: 1. Trip Generation Characteristics of Small to Medium Sized Casinos by Michael Trueblood, Tara Gude In/Out rates during PM peak hour are based on 0.31 trips per slot and 0.28 trips per slot.
2. ITE Trip Generation Manual, 9th Edition, Volume 3
3. ITE Trip Generation Manual, 9th Edition, Volume 1, Appendix C
4. The rounding of numbers may result in minor inconsistencies between various calculations.

Table 2: Peak Hour Project Generated Trips for Build Condition for Saturday Peak Hour

PEAK HOUR PROJECT GENERATED TRIPS FOR BUILD OUT CONDITION					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Saturday Peak*	
				IN	OUT
				53.1%	46.9%
1	**Casino** *Traffic derived from St. Louis casinos Person Trip Rates*	*3,600 Gaming Position*	*0.640*	1223	1081
				52.0%	48.0%
2	**Shopping Center** *ITE Land Use:820*	*140,000 Square Ft.*	7.770	566	522
1	*Multi-use Site Internal Capture Between Casino and Shopping Center*		*34%*	-192	-178
2	*Passer-By Credits for Casino Trips*		*0%*	0	0
PROJECT GENERATED VEHICULAR TRIPS				1597	1425
TOTAL PROJECT GENERATED VEHICULAR TRIPS				3022	

Reference: 1. Trip Generation Characteristics of Small to Medium Sized Casinos by Michael Trueblood, Tara Gude In/Out rates during PM peak hour are based on 0.34 trips per slot and 0.30 trips per slot.
2. ITE Trip Generation Manual, 9th Edition, Volume 3
3. ITE Trip Generation Manual, 9th Edition, Volume 1, Appendix C
4. The rounding of numbers may result in minor inconsistencies between various calculations.

Greenetrack Inc. Casino Development Land use Components

Casino Component

Trip generation for a casino development is based on the number of gaming positions anticipated to be constructed in the proposed facility. In general, trip generation rate per gaming position also includes traffic that is generated by other uses within a typical casino facility such as a hotel, convention center, spas, clubs, pools, retail space, theater, restaurants and guest rooms and suites (not independently owned or free standing facilities), etc. These trips, therefore, are considered within the Casino Component. Furthermore, since most of the trip generation surveys are conducted by utilizing the driveway counts of a casino, employee trips are also included in the trip generation estimate. It is however important to note that most of the employee trips are made outside of the peak periods so that casinos are prepared before patron arrival and therefore their trips are not usually anticipated during the weekday PM peak hours.

The number of gaming positions for the proposed casino was stated on the development proposal submitted by the Greenetrack, Inc., dated April 9, 2014 to the Town of New Windsor. The document indicated a conceptual gaming facility comprised of 3600 gaming positions and this value was used to generate the proposed casino trips for this traffic assessment.

The trip generation calculation for the casino component was conducted by comprehensive research that included review of available and previously conducted casino and gaming facility traffic studies of similar nature, evaluation of traffic generation rates presented in the ITE Trip Generation Handbook, the casino market assessment report prepared by Gaming Market Advisors and other reliable publications. Following documents were reviewed before selecting the appropriate trip generation rate for the casino component of the proposed project.

- Saratoga Gaming & Race Study – Traffic Evaluation conducted by Clough Harbour & Associates LLP
- Crossroad Gaming Resort & SPA – Grove Miller Engineering, Inc. Traffic Engineering Consultant Harrisburg, PA
- Aqueduct Racetrack Video Lottery Terminals – Phillip Habib & Associates, January 2004 Traffic Study – Prepared for New York Racing Association
- Las Vegas Hotel/Casino – Curtis D. Rowe, Mohamed S. Kaseko and Kenneth W. Ackert, ITE Journal May 2002
- Local Hotel/Casino single Variable – Curtis D. Rowe, Mohamed S. Kaseko and Kenneth W. Ackert, ITE Journal May 2002
- St Charles Peak Hour Vehicular Traffic Flow per Gaming Position – Paul C. Box and William Bunte, ITE Journal May 1998
- St Charles Queen Casino Vehicular Traffic – Paul C. Box and William Bunte, ITE Journal May 1998
- Trip Generation Characteristics of Small to Medium sized Casinos – Michael Trueblood, Tara Gude, HDR Engineering, Inc.

- Mountain Resort & Casino – Town of Thompson, NY – Creighton Manning Engineering, LLP Albany, NY
- Harrah's Narragansett Casino –Vanasse Hangen Brustlin, Inc.
- Sugarhouse Casino – Urban Engineers, Inc.
- East Coast Casinos – Tilton Associates.
- ITE Trip Generation Manual – 9th Edition

Trip generation rates prensented in all of these studies and publications were correlated to the number of gaming positions. These individual trip generation rates per gaming position for each casino facility were then applied to the proposed number of gaming positions (3600) for the Greenetrack casino site. Utilizing this compendium of trip generation rates results in a conservative trip generation projection of vehicular trips for this assessment. This comparative trip generation review was done for the Weekday (Friday) PM peak hour only as the trip generation rates was mostly applicable for this peak period in these previously conducted studies. The trip generation rates from various studies that were used in this comparative trip generation effort for calculating trips for the Greenetrack casino development are presented in Appendix G.

Utilizing the higher number of projected trips based on proposed gaming positions would result in a more conservative traffic impact assessment. The publication: Trip Generation Characteristics of Small to Medium sized Casinos – Michael Trueblood, Tara Gude, HDR Engineering, Inc., offers the highest trip generation forecast, and was therefore selected for this supplemental traffic study assessment. The comparison of various trip generation studies is presented in Appendix H. This is consistent with the Full Environmental Assessment Form that was submitted to the Town of New Windsor for this project.

Thus, for the casino component there will be a total of 2124 vehicular trips during the Friday PM peak. This will include traffic 1115 entering trips and 1009 vehicles exiting trips. The trip generation estimate for the casino component is presented in Table 1. In addition to providing conservative trip generation rate noted earlier, this publication also provides a conservative trip generation rate for a typical weekend peak hour. Trip generation for the casino component for Saturday peak hour is shown in Table 2. The weekend peak hour is anticipated to generate a total of 2304 vehicular trips. This will include 1223 entering trips and 1081 exiting trips.

Retail Component - Shopping Center

The full build conceptual plan developed by Greenetrack, Inc. includes a free-standing 140,000 square feet retail component to be on an adjacent site located north of the casino development on International Boulevard. The retail component will not be housed within the casino resort. The traffic generation rates shown in the latest ITE Trip Generation Manual (9th Edition, Volume 3 –LU 820) for a shopping center based on leasable area. During the weekday PM peak hour there will be a total of 750 vehicular trips. This will include 360 entering trips and 390 exiting trips. During the weekend peak hour there will be a total of 1088 vehicular trips. This will include 566 entering trips and 522 exiting trips. Trip Generation for the free-standing shopping center component is presented in Table 1 and 2 for the weekday PM and the weekend peak hours, respectively.

Internal Trip Capture: The internal capture trips represent trips that are generated by a multi-use site and account for the common and overlapping "on-site" trip generating activities. It is anticipated that casino patrons will also utilize the free-standing shopping center and according to ITE Trip Generation Manual, this capture rate could range anywhere between 28-41% of daily trips generated within multi-use sites. Thus, GPI took an average of these two extreme percentages and used an average internal capture rate of 34% to account for usage of both facilities on the same trip.

Pass-By Trips: Both casino and retail components of this development will share the same roadways for access. A passer-by credit is one wherein the trip would be made regardless of whether the proposed project is constructed. While it is possible that employees that work at buildings within NYIP or travelers to and from Stewart International Airport could visit the casino or shopping center, we believe the numbers would be negligible and we, therefore, did not use a passer-by credit.

It is important to mention that a very conservative trip generation rate for casino and retail components was used for projecting future trips. For example, if an average rate was used for the casino component rather than the highest rate, about 658 fewer trips could be expected during the Friday PM peak hour and about 714 fewer trips could be expected during the Saturday peak hour. Appendix H presents the backup calculation for the Friday PM peak hour.

Proposed Project Modal Split

The predominate mode of travel within Orange County is automobile. Only 5.1% of all trips made to/from work in Orange County are done using public transportation according to the U.S. Census Bureau.[8] A review of the public transportation options surrounding the project site only shows one bus service to shuttle passengers from the Beacon MetroNorth Train Station to Stewart International Airport. For the weekday PM peak hour, only one trip is scheduled and neither the shuttle nor MetroNorth trains are scheduled for the weekends. Although some employees or guests to the casino may use the MetroNorth services during the weekdays, the lack of continuously available public transportation would encourage automobile trips. For the majority of patrons originating their trips from suburbs of Lower Hudson Valley, Western Connecticut, and Northern New Jersey, automobile will be the primary mode of transport to and from the Greenetrack, Inc. Development. In order to attract more patrons who otherwise would opt out of driving long distance to visit the casino destination, many casinos offer motor coach services from designated urban and suburban town centers. The conceptual design of Greenetrack, Inc. casino included a parking area for approximately 20 buses for potential future use. Since the trip generation projections were forecasted by data collected at five different casino studies (Trip Generation Characteristics of Small to Medium sized Casinos – Michael Trueblood, Tara Guda, HDR Engineering, Inc), all vehicles (regardless of passenger capacity) were accounted for, therefore, no additional modal split adjustments were made for this site.

[8] U.S. Census Bureau, 2008-2012 American Community Survey

5. TRIP DISTRIBUTION AND ASSIGNMENTS

Research was conducted by a gaming market analyst to determine where Greenetrack casino patrons will originate their trips. New York, portions of Pennsylvania, Northern New Jersey, Connecticut, Massachusetts, and Vermont were identified by zones and frequencies of visits in order to indicate market segment and patron origins. Thus, the regional travel distribution between the proposed Greenetrack, Inc. site and these customer market zones (21+ population age group) was established utilizing a *"Zip Code and Market Segment Model"*, by Gaming Market Advisors. This is a widely used model in the gaming industry. This model is also used to assist in predicting traffic interaction between various travel zones to and from the proposed casino.

The two main routes into the casino would be International Boulevard and Breunig Road as previously shown on Figure 2 - Project Location Map. International Boulevard would be the primary route since it is conveniently located near the adjoining interstate routes. Patrons would access International Boulevard via Route 747 which has a recently constructed interchange with I-84 to the north. I-84 is easily accessible from I-87 since that interchange was reconstructed and a local street connector was eliminated. Route 747 is also accessible from Route 207 on the south. In addition, it is anticipated that all promotional material (web site, brochures, advertising, etc.) and guide signing would direct motorists to use the interstate system. The secondary route into the casino would be Breunig Road which can be accessed via Route 207. This route is expected to be used by patrons with origins close to the casino and without easy access to the Interstate Routes. It is anticipated that retail visitors for the proposed shopping center will share similar trip distribution.

The overall trip assignment in the project area is presented in Table 3.

Table 3: Trip Assignment of Casino Patrons for the Proposed Greenetrack, Inc. at New Windsor Site

MARKET SEGMENT	NUMBER OF ANNUAL VISITS	CONCENTRATION OF TRIP ORIGINS	EXPECTED ROUTE			
			Via International Boulevard			Via Breunig Road
			I-84	I-84 via I-87	Rt 747	Rt 207
NYSouth	2,143,379	46%	34%	15%	22%	30%
Western CT	509,298	11%	100%			
Northern NJ	1,373,663	29%	10%	90%		
Others	666,720	14%	50%	50%		
		Trip Assignment:	***36%***	***40%***	***10%***	***14%***
		Trip Assignment Total:	***86%***			***14%***

As shown on Table 3, the Market Segment Map and data, provided by Greenetrack, Inc.'s gaming market analyst, almost half, or 46%, of possible future Greenetrack, Inc. Casino patrons will originate their trips from "NYSouth" zone, which includes Lower Hudson Valley counties and Yonkers. Within the NYSouth zone these trips will be distributed among I-84, I-87, and local roadways depending on the proximity of access ramps to the two interstate highways. Market segment percentage and the most accessible roadways within "NYSouth" zone are presented in Appendix I. It is estimated that 49% of patrons from "NYSouth" zone would use either I-84 or I-

87, 22% would use Route 747, and the remaining 30% would chose Route 207 for access to the casino development.

In addition, 11% of the patrons would be from Western Connecticut, 29% would originate from Northern New Jersey, and the remaining 14% would be from other nearby areas. I-84 is easily accessible to potential casino patrons from Western Connecticut and, therefore, the assigned route. Population density in Northern New Jersey is mostly concentrated near Hudson River, where I-87 is easily reached. It is expected that 90% of potential casino patrons from New Jersey would be using I-87 to connect to I-84 and the remaining 10% would access I-84 from local roads. Trips of patrons from other regions are assumed to be distributed evenly between I-84 via local roads and I-84 via I-87 because both major roadways are accessible to potential patrons from the wider region.

It is important to note that this anticipated traffic distribution and assignment also correlates to that of the 2002 NYIP study in which 85% of motorists would take advantage of the transportation improvements on I-87, I-84, Route 747 and International Boulevard.

Thus, due to the negligible difference in the trip assignment patterns between the proposed casino traffic and that predicted in the 2002 NYIP study, it is reasonable to assume that the traffic patterns for the casino will be similar.

6. BUILD CONDITION TRAFFIC ASSESSMENT (2015)

In order to be consistent with the 2015 Full Build Condition stated in the 2002 NYIP traffic study, GPI will assume that the proposed project will be constructed in 2015 and investigate whether volumes generated by Greenetrack, Inc. casino and shopping center development will exceed that of the approved NYIP development.

Partial NYIP Developments That Have Occurred Between 2002 and 2007

The proposed NYIP development had originally included approximately 2.5 million-square-foot of mixed-use land development that was anticipated to generate 3152 vehicular trips during weekday PM peak hour. Research conducted by GPI has revealed that only about 951,000 square-foot (or 38%) of the overall development was completed by 2007. The land use that has already been constructed mainly included corporate housing, light manufacturing, general/medical office and R&D facilities. These completed components are generating approximately 921 vehicular trips during the PM peak hour.[9] The proposed site for the casino and shopping center development will be located on land parcels, identified as zones 4, 5, 6, 8, 9, 10, 11, 12, 13, and 21, as labeled in the 2002 NYIP traffic study. See Appendix J depicting the zones that will be occupied by the proposed new casino instead of the previously planned land uses. The aforementioned parcels were planned for the construction of 1,451,700 sf of mixed use development. As noted above, the original NYIP development was approved for 2.5 million sf. Therefore, approximately 100,000 sf (2,500,000 – 950,000 – 1,451,700) could be developed after this project is constructed. The remaining 100,000 sf was listed as a hotel and office space in the NYIP Study and was estimated to generate 161 weekday pm peak hour trips.

As referenced in Section 3 of this assessment, the most recent AADT obtained by NYSDOT for 2012 has shown a negative annual traffic growth on roadways around the project study area even after 38% of the NYIP was completed. It is reasonable to assume the trip generation resulting from these already constructed land uses (921 vehicular trips) have been accounted for in the conservative 2015 background no-build condition presented in the 2002 NYIP traffic study. Therefore, it can be concluded that the 2015 build condition project generated trips from the 2002 NYIP traffic study remain available for the new casino and retail development. Consequently, 3152 new PM peak hour vehicular trips can still be accommodated for the future build condition with 161 trips reserved for any future development of the remaining parcels. This leaves 2991 new trips (3152 – 161 = 2991) that can be generated by this development for the weekday PM peak hour without exceeding the combined trip volumes used as the basis for the proposed mitigation measures set forth in the NYIP Traffic Study as well as the Town's Negative Declaration.

Full Build Condition With Proposed Casino (Weekday PM Peak 2015 Scenario)

According to Table 1, the proposed casino and shopping center are expected to generate a total of 2619 vehicular trips during PM peak hour. There is an anticipated PM peak allowance of

[9] New York International Plaza Use Tracking Sheet dated 1/09/2007 prepared by First Columbia International Group, L.L.C.

2991 vehicular trips that can be accommodated in the 2015 Full Build Condition. The 2015 full-build condition with proposed mitigation measures were analyzed, accepted, and approved by the town as documented in the Negative Declaration determination. Thus the potential of any traffic impacts generated by the proposed casino project can be considered as mitigated under the 2015 full-build with improvement condition for the weekday PM peak hour.

It is, however, important to note that land use difference between previously proposed NYIP land uses and this proposed development will alter inbound and outbound traffic patterns. The 2015 full-build weekday PM peak hour directional volumes shown in the 2002 NYIP traffic study reflects 30% inbound (953 vehicles) and 70% (2199 vehicles) outbound traffic. For the proposed casino project the anticipated weekday PM peak hour directional volumes will be 52% inbound (1353 vehicles) and 48% (1266 vehicles) outbound traffic. This shift in directional pattern is not expected to have a significant impact on the outbound traffic and, in fact, may operate better than expected under the full build NYIP development. However, for the inbound traffic, some intersection signal timing modifications for the weekday PM peak hours may be needed. We anticipate that the most critical intersection within the study area, due to this volume shift, will be Route 207 at Route 300. The level of service calculated for the 2015 full-build with improvement condition presented the lowest level of service of all the study intersections in the 2002 NYIP traffic study. The following analysis was performed to determine the potential future traffic impacts, if any at this intersection.

As per trip distribution and assignment discussion in Section 5, 15% of the trips generated will access the site via Breunig Road and Route 207. Even though some of the local vehicles may not enter the intersection of Route 207 and Route 300 (due to other available routes such as Route 207 west, Hudson Valley Avenue, Mount Airy Road, etc), 15% of casino-generated traffic is applied to this intersection to perform a conservative analysis to determine any potential impacts. By comparing with NYIP-generated lane group volume ratio from the 2002 NYIP traffic study, the anticipated trips from the casino and retail development were distributed among relevant lane groups and were combined with 2015 background volumes. The calculations are presented in Appendix K and the results are shown in Figure 5.

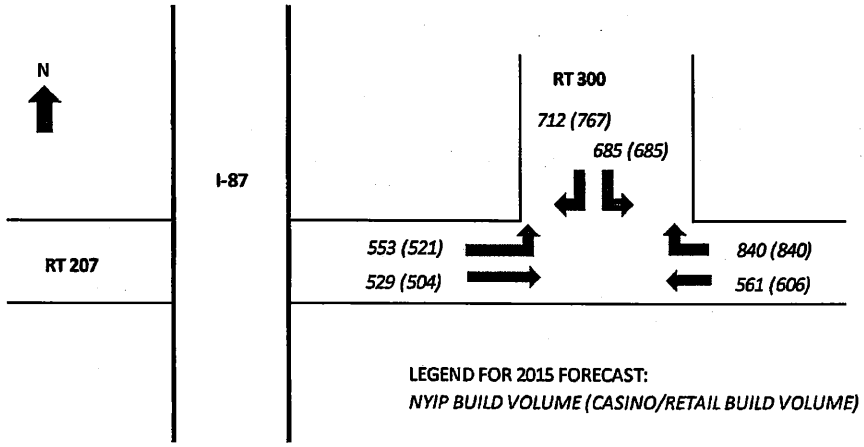


Figure 5: 2015 Full Build Traffic Volumes – Weekday PM Peak Hour (NYIP vs. Greenetrack, Inc. at NewWindsor)

As shown in Figure 5, inbound lane groups, which include southbound right-turn and westbound through movements, will carry more future trips than the outbound lane groups, which include eastbound left-turn and through movements for the proposed development as compared to the NYIP. In the 2002 NYIP traffic study under the 2015 full-build with improvement condition, the southbound right-turn approach was evaluated to have level-of-service B and C for AM peak hour and PM hour, respectively and the nominal additional traffic volume generated by this development will not cause any failure in traffic operation. Similarly, in the same study under the 2015 full-build with improvement condition, the westbound through approach was evaluated to have level-of-service E for both AM peak hour and PM hour; this indicates constrained traffic operation for this approach. Since traffic volumes will be decreasing on some approaches and the net increase within the intersection is approximately 50 vehicles during the peak hour (only a 1% increase in total volume within the intersection), adjustments to the signal timing would address the increased volume on the westbound approach. In addition, it should be recognized that a conservative approach was taken on the use of 2015 background volumes and estimates for trip generation. Therefore, the proposed mitigation measures presented in the 2002 NYIP traffic study and also described later in the report will address any improvements needed for this intersection, as well as other possible areas, as a result of the casino and retail development.

Full Build Condition With Proposed Casino (Weekend Saturday Peak 2015 Scenario)

Casino's and shopping centers often generate significant traffic on weekend, especially on Saturdays. Thus, it was important to conduct traffic assessment for the weekend peak hours for the proposed Greenetrack, Inc. casino and shopping center development. However, the 2002 NYIP traffic study was not conducted for weekend peak hour conditions and thus, comparative data was not available for this supplemental traffic study. As a result of this lack of data, GPI conducted a comparison of the available Saturday peak hour data vs. the weekday PM peak hour data at two locations from the NYSDOT continuous count stations (web-sources). The purpose of this assessment was to determine the percentage difference in traffic volume between weekday PM peak hour and Saturday peak hour, that may be subjected to the project area. This information would also help in determining if further mitigations were warranted.

1. *Breunig Road between Route 207 and International Boulevard*
   As referenced in Section 3 of this assessment and presented in Table 4, there will be a 23% decrease in background traffic on a Saturday peak hour when compared to a weekday PM peak hour on this section of the roadway. With a distribution pattern of 15% patrons traveling on Route 207 and Breunig Road, it is estimated that new trips by Casino will add 453 vehicles per hour on Breunig Road (240 inbound and 213 outbound vehicles) during Saturday peak hour. This represents a net decrease of 12 vehicles for Saturday peak hour when compared to the weekday PM peak hour condition. Thus, on this segment of roadway there will be less vehicular trips on Saturday peak compared to the weekday PM peak hour trips.

2. *International Boulevard between Route 747 and Breunig Road*

As referenced in Section 3 of this assessment and presented in Table 4, there will be a 53% decrease in background traffic on a Saturday peak hour when compared to a weekday PM peak hour on this section of the roadway. With a distribution pattern of 85% on Route 747 and International Boulevard, it is estimated that new trips for the Casino will add 2569 vehicles per hour on International Boulevard (1357 inbound and 1212 outbound vehicles) during Saturday peak hour. This represents a net increase of 157 vehicles for Saturday peak hour when compared to the weekday PM peak hour condition. Furthermore, these 157 vehicles will be distributed amongst different approaches thereby minimizing any potential of traffic impact to the roadway network. In addition, International Boulevard has sufficient capacity to accept additional vehicles.

Table 4: Traffic Volume Comparison for Weekday Peak Hour vs. Saturday Peak Hour:

Route		Breunig Road	International Blvd.
Locations		Between Route 207 and International	Between Route 747 and Breunig Road
Continuous Count Station		831342	831343
DOT Existing Volume for Weekday PM Peak *	Veh/Hr	314	351
DOT Existing Volume for Saturday Peak **	Veh/Hr	242	165
Difference of Background Volume: Weekday PM Peak vs. Saturday Peak		-72	-186
Weekday PM vs. Saturday Difference Rate		-23%	-53%
Anticipated Trip Generation for Weekday PM Peak***	Veh/Hr	393	2226
Anticipated Trip Generation for Saturday Peak****	Veh/Hr	453	2569
Difference of Trip Generation: Weekday PM Peak vs. Saturday Peak		60	343
Net Difference in Volume		-12	157

*NYS DOT ATR counts for Weekday PM Peak hour (4PM - 5PM)
**NYS DOT ATR counts for Saturday Peak hour (2PM - 3PM)
***Trip Generation of Greenetrack, Inc. at New Windsor, which includes casino and shopping center components for weekday PM peak hour. Trips are distributed: 15% on Breunig Road and 85% on International Blvd. See Table 1 in report.
****Trip Generation of Greenetrack, Inc. at New Windsor, which include casino and shopping center components for Saturday peak hour. Trips are distributed: 15% on Breunig Road and 85% on International Blvd. See Table 2 in report.

This assessment indicates no significant differences between traffic volumes of weekdays PM peak period and that of Saturday peak period, thus the traffic impacts generated by the proposed project during Saturday peak hour are not significant and are anticipated to be mitigated under the 2015 full-build with improvement condition that is represented in the 2002 traffic study.

7. MITIGATION REQUIREMENT ASSESSMENT

A set of mitigation measures was originally developed and analyzed for the impacted intersections for the NYIP development in the 2002 study. Some of the mitigation measures were applied after the 2002 study; some mitigation measures were proposed but had not been put into effect. Applying these mitigation measures will ensure that any potential traffic impacts anticipated by the proposed casino project will be minimized and satisfactory traffic operation conditions will continue as originaly envisioned and accepted by the Town. In addition, the preliminary plans of the proposed casino project has shown some roadways and intersections may be removed during the construction of this project. Those intersections were discussed in the 2002 NYIP study but are not considered in the following list of mitigation measures (as they will not exist under the proposed casino project).

- *COMPLETED MITIGATION MEASURES FOR NYIP*

  - Construction of a new interchange of I-84 at Route 747 overpass
  - East-West connector road from Drury Lane to International Boulevard
  - International Boulevard at World Trade Way:
    - Eastbound Approach: an exclusive left turn lane, a through lane, and a shared through/right turn lane
  - Relocate and extend Hudson Valley Avenue with a new intersection at Avenue of Americas from Route 207 to Aviation Avenue
  - Corporate Housing Access Road will have access provided from World Trade Way west of World Trade Way
  - Remove Tozzoli Avenue North of International Blvd.
  - Route 207 at Route 747:
    - Eastbound Approach: one exclusive left turn lane; one thru lane
    - Westbound Approach: one shared through/right turn lane
    - Southbound Approach: one exclusive left turn lane; one right turn lane
    - Signalization
  - Route 207 at Hudson Valley Avenue:
    - Southbound Approach: one right turn lane and one left turn lane
    - Eastbound Approach: one exclusive left turn lane
    - Westbound Approach: one exclusive right turn lane
    - Signalization
  - International Blvd at Breunig Road:
    - Northbound Approach: one left turn bay and one shared through/right turn lane
    - Southbound Approach: one left turn lane and one shared through/right turn lane
    - Eastbound Approach: one shared left turn/through lane and one shared through/right turn lane (unmarked)

- Signalization

➢ International Blvd at Proposed Site Entry (Currently Aviation Avenue):
  - Widen International Boulevard to accept dual left turn movement from Aviation Avenue
  - Both Eastbound and Westbound Approaches: one exclusive left turn lane, one through lane, and one shared through/right turn lane

During GPI's field visit of April 23, 2014, these locations were inventoried and proposed mitigation measures were noted to be implemented and field verified. The implementation of these measures will also help traffic operations that are anticipated for the proposed casino project (as there is no significant difference in the overall build condition traffic volumes that will be anticipated either by the casino project or the 2002 NYIP study of mixed use land development project).

- *PROPOSED MITIGATION MEASURES FOR NYIP THAT HAVE NOT BEEN IMPLEMENTED*

➢ Relocate Sue Kelly Avenue 950' to the south, maintaining a connection between Breunig Road and Avenue of the Americans with stop controls

GPI Assessment: From the casino traffic operation stand-point this improvement may have no significant effect on traffic operations within project area.

➢ International Blvd at World Trade Way:
  - Eastbound Approach: Widen roadway to provide exclusive right turn lane
  - Northbound approach: one exclusive left turn lane and a shared left turn/through/right turn lane
  - Westbound Approach: one exclusive left turn lane, one through lane, and one shared through/right turn lane
  - Southbound Approach: add one exclusive right turn lane
  - 2-lane each direction with stop controls on World Trade Way
  - Signalization

GPI Assessment: The proposed improvements with the exception of possible signalizing this intersection do not appear to be needed to mitigate traffic bound for the casino since the main traffic movements will be through traffic along International Boulevard.

- Airport Center Drive at Aviation Avenue and Hudson Valley Avenue
  - Remove section of Hudson Valley Avenue between Airport Center Drive and Aviation Avenue to provide a channelized right turn lane from Hudson Valley Avenue to intersect with Airport Center Drive and a channelized right turn lane from Airport Center Drive to connect to Hudson Valley Avenue
  - Remove stop signs from Hudson Valley Avenue and Aviation Avenue; Install stop signs on World Trade Way approaches

GPI Assessment: According to Figure 1 – Conceptual Site Layout, Aviation Avenue will no longer intersect with Airport Center Drive since casino will be developed in this area. However, some improvements may be needed to facilitate delivery and service vehicles at this location and should be considered during the site plan development phase.

- International Blvd at Proposed Site Entry (Currently Aviation Avenue):
  - Northbound Approach: a left turn lane and a shared left/through/right turn lane

GPI Assessment: This improvement will be located at the future site access driveway of the proposed casino development on International Boulevard. Majority of the trip generation is anticipated at this location and the double left turn operation will enhance intersection performance. Implementation is recommended.

The aforementioned mitigation measures were taken from the description presented in the 2002 NYIP traffic study. During a field visit in April 23, 2014 these measures were noted not to be presently implemented. Benefits from these improvements were accounted for in the intersection analysis presented in the 2002 study for the 2015 full-build with improvement condition. However, the mitigation should be amended and considered as noted above to reflect the casino development. In addition, traffic data collection and traffic signal warrants assessment may be required six months after the start of casino operation in order assess the microscopic needs for further traffic improvements, especially at driveways leading to/from the casino site.

OFF-SITE MITIGATION MEASURES

Additional mitigation measures may help in enhancing traffic operations in and around the casino and retail development site.

- Intersections:

- At the International Boulevard and new Main Site Entrance removal of the existing raised median and construction of dedicated turn lanes. All work shall conform to NYSDOT Standards.
- Accessible routes shall be designed to maintain longitudinal and cross slopes that comply with A.D.A. requirements. Sidewalk width shall be a minimum of 5 ft. ADA compliant ramps and detectible warning strips shall be placed at all curb cuts. Structures shall be in accordance with MAG Standard Details and Specifications. All ADA sidewalks shall conform to NYSDOT Standards.

➢ Pavement Resurfacing consisting of production profiling cold place milling on Sue Kelly Avenue and Aviation Avenue to accommodate service vehicles and motor coaches. Improvements will include milling to a depth of 2 inches and placement of surface course asphalt to a depth of 2 inches. All work shall conform to NYSDOT Standard Specifications for Materials and Construction.

➢ Modifications to existing pavement striping to create a left turn lane at the secondary site entrance on Breunig Road. Pavement Markings shall conform to MUTCD standards as revised by NYSDOT.

➢ Several intersections may require traffic signal timing adjustments and traffic signal warrant studies due to the anticipated change in traffic patterns. Traffic data collection should be conducted six months after the start of casino operation in order to assess traffic signal needs at these intersections. The locations for potential future traffic signals as follows:

- Route 747 at International Boulevard
- International Boulevard at proposed site access driveways of casino and shopping center
- Breunig Road at proposed site access driveway

➢ Greenetrack recognizes the existing traffic operation issues on NY Route 207 between the Breunig Road and NY Route 300 intersections. Greenetrack would participate in funding minor intersection improvements at these intersections to accommodate left turns and enhance the through movement of traffic in this corridor. These minor intersection improvements would consist of construction of dedicated turn lanes as well as installation of traffic signals as warranted. Intersection improvements would include the following:

➢ <u>NY Route 207 at NY Route 300</u>- Extend the existing dedicated right turn lane on the westbound NY Route 300 approach.

➢ <u>NY Route 207 at NY Route 300</u>- The town of New Windsor is presently developing a project to extend the existing dedicated left turn lane on the eastbound NY Route 207

approach. The turn lane would be extended to the west past the intersection of Moores Hill Road. Greenetrack would participate in the construction of this improvement.

- NY Route 207 at Square Hill Road and Weather Oak Hull Road- Greenetrack will participate in evaluation of potential intersection improvements at these intersections. Improvements would include re-alignment of these offset intersections with a traffic signal.

- NY Route 207 at Breunig Road- Extend the existing dedicated right turn lane on the westbound NY Route 207 approach to the retail strip mall. Widen northbound Breunig Road to provide a second lane to meet the existing four lane section.

The scope and location of these improvements would be refined further as part of site plan review.

8. CONCLUSION

The traffic assessment conducted for the proposed Greenetrack, Inc. project has indicated that this project could be feasibly constructed without creating any significant traffic impacts on the surrounding roadway network. Some additional relatively minor mitigation measures that were originally proposed for the NYIP development or recommended in this report will mitigate anticipated traffic impacts and allow a negative declaration determination from a transportation viewpoint.

Important to note are the following key facts:

- Based on the preliminary design of the development site, the geometry of the following intersections will be altered as a result of the construction.
  - International Boulevard and Tozzoli Avenue will be removed.
  - Airport Center Drive and Tozzoli Avenue and Bill Larkin Drive will be removed.
  - At International Boulevard and Aviation Avenue, the north and south legs of the intersection may be converted into site access driveways.

- Part of the NYIP was constructed and is currently in operation. The traffic generated by the partial development are already accounted for in the recent traffic counts which are lower than the 2015 background no-build volume, hence, new trip generation allowance in the 2002 study is available for the Greenetrack, Inc. at New Windsor and other future development in the project area.

- Anticipated overall traffic volumes associated with Greenetrack, Inc. development were found to be lower than that of the NYIP development. Furthermore, select improvements proposed in the 2002 NYIP study that have been constructed and are presently operational. As a result of these findings. potential traffic impacts from the proposed casino project are expected to be mitigated.

- Lastly, this traffic study is based on conservative trip generation estimates. Including:

  1) The use of the 2015 background traffic volumes from the 2002 study even though recent traffic data is projected to be less the aforementioned 2015 data.

  2) The use of highest trip generation rates and traffic projections based on past studies of various casino developments.

In summary, the traffic assessment conducted for the proposed Greenetrack, Inc. at New Windsor project has indicated that the proposal could be feasibly implemented without creating any unmitigatable or significant traffic impacts to the surrounding roadway network.

SUPPLEMENTAL TRAFFIC ASSESSMENT APPENDICES

For

GREENETRACK INC. AT NEW WINDSOR
New Windsor, New York

May, 2014

Prepared by:

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

APPENDIX A

New York State Department of Transportation Traffic Volume Report

New York State Department of Transportation

Date: 7/12/2013

Traffic Volume Report

County Order	EMP	Ref Marker	Section Length	End Description	LATEST COUNT EST AADT	YR	PREVIOUS COUNTS EST AADT	YR	EST AADT	YR	EST AADT	YR	Station CC Station
		Route NY17C		County 007 BROOME	Region 09								
02	5.01	17C91021043	0.93	Village Of Endicott And Town Of Union	16466	12	16381	08	12158	02	13396	99	0352
02	5.54		0.53	CR 33 Hooper Rd Bridge Over	14124	12	14147	11	20187	08	19809	05	0351
02	6.18	17C91021055	0.64	Bridge Over Rt 17	25938	12	25980	11	29216	08	25726	02	0350
02	6.51	17C91021064	0.33	Acc Rt 17	30129	12	30177	11	31565	08	30833	06	0123
02	8.33	17C91021082	1.82	RT 201 Over	12241	12	12261	11	10545	08	9716	07	0314
02	9.57	17C91021095	1.24	St Charles Street	11607	12	11635	10	10791	07	11113	02	0349
02	10.09		0.52	Park St	11591	12	11619	10	12104	07	13235	05	0125
02	10.95		0.86	Walnut St	15236	12	15236	12	13753	11	17916	05	0126
02	11.27		0.32	RT 11 End RT 17c Front St	16178	12	16178	12	12085	09	16248	01	0001
		Route NY17K		County 071 ORANGE	Region 08								
01	0.46	17K83011004	0.46	RT 17	4286	12	4311	09	4985	06	4925	03	0163
01	3.83	17K83011034	3.37	RT 302 Bullville	4798	12	4798	12	4126	09	5158	06	0674
01	10.45	17K83011104	6.62	CR 14 Albany Post Rd	5909	12	5546	12	5944	09	5709	06	0133
01	10.77	17K83011107	0.32	RT 211 Montgomery	13773	12	13790	10	13902	06	15745	04	0676
01	12.67	17K83011127	1.90	Village Of Montgomery & Town Of Montgomery	11995	12	12009	10	12347	07	14782	04	0677
01	15.24	17K83011136	2.57	CR 75 Coldenham Rd	9054	12	9065	11	9747	08	10553	05	0678
01	16.99	17K83011153	1.75	RT 747 Inter Blvd	12841	12	12856	10	13593	07	16758	04	0155
01	17.53	17K83011169	0.54	Lakeside Rd	16854	12	16874	10	22498	07	23914	04	0055
01	19.95	17K83011199	2.42	RT 300 Union Ave	16340	12	16340	12	16652	09	17510	03	0070
01	20.17	17K83011200	0.22	Acc Rt 87I	22977	12	22496	06	23378	03	21957	00	0047
01	21.07	17K83011206	0.90	City Of Newburgh	20919	12	20944	11	26089	07	19865	04	0154
01	21.48		0.41	RT 207 Wisner Ave	12979	12	12995	10	15250	07	18227	04	0679
01	22.23		0.75	West St	17011	12	17011	12	16661	09	15815	03	0303
01	22.45		0.22	Prospect Ave	20337	12	20294	11	20262	10	18273	07	0238
		Route NY17M		County 071 ORANGE	Region 08								
01	1.05	17M83011031	1.05	RT 302	6528	12	6536	10	4793	07	5722	04	0680
01	3.09	17M83011031	2.04	City Of Middletown	8205	12	8215	11	8702	08	9390	05	0681
01	3.94		0.85	Start 17m/211 Olap North St	4810	12	4816	11	5650	08	5786	05	0024
01	4.70		0.76	Wickham Ave	8152	12	8162	11	10789	08	10108	05	0065
01	5.27		0.57	Wawayanda Ave	6431	12	6445	10	7349	07	7387	04	0520
01	5.51		0.24	South St	6925	12	6933	10	4956	07	6329	04	0085
01	6.77		1.26	Preston St	12869	12	12884	11	13182	10	13990	07	0084
01	7.10	17M83013002	0.33	Start 6/17m Olap	41726	12	41601	09	38828	06	31133	05	0069
01	7.51	6 83012158	0.41	I-84	29421	12	29456	11	32972	08	27146	99	0018

New York State Department of Transportation

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Traffic Volume Report

County Order	EMP	Ref Marker	Section Length	End Description	LATEST COUNT EST AADT	YR	PREVIOUS COUNTS EST AADT	YR	EST AADT	YR	EST AADT	YR	Station	CC Station
		Route NY206		County 025 DELAWARE	Region 09									
03	8.19	206 93031023	6.11	Town Of Masonville & Town Of Tompkins	2296	12	2293	10	2518	07	2310	04	0013	
03	11.72	206 93031108	3.53	Town Of Tompkins Town Of Walton	2170	12	2167	10	2315	07	2339	04	0025	
03	17.74	206 93031177	6.02	Town Of Walton & Village Of Walton	2475	12	2475	11	2837	08	2587	05	0109	
03	18.25	10 93011275	0.51	End 10/206 Olap	7848	12	7813	09	10577	06	9507	03	0036	
03	28.26	206 93031279	10.01	Village Of Walton & Town Of Walton	1726	12	1718	09	3190	04	2221	01	0303	
03	31.34	30 93011180	3.08	End 30/206 Olap	1827	12	1827	11	1925	08	1702	05	0301	
03	39.85		8.51	School House Rd	1910	12	1914	11	1680	08	1324	05	0047	
03	40.72		0.87	Morton Hill Rd	2209	12	2209	12	2203	11	2266	10	0048	9381
		Route NY206		County 105 SULLIVAN	Region 09									
04	1.60	WILCOX AVE	1.60	Wilcox Ave	2123	12	2136	09	2460	06	3407	05	0031	
04	2.09		0.49	Union St	3139	12	3158	09	3504	04	3458	01	0032	
		Route NY207		County 071 ORANGE	Region 08									
01	0.77	207 83011007	0.77	North & South Church Streets	10760	12	10773	10	11702	07	14801	04	0092	
01	1.34	207 83011013	0.57	CR 66 CRaigville Rd	14100	12	14117	11	14613	08	13907	05	0020	
01	1.71	207 83011017	0.37	CR 8 Sarah Wells Trl	9484	12	9495	10	10282	07	11865	04	0134	
01	5.53	207 83011054	3.82	Village Of Goshen & Town Of Goshen	6940	12	6887	09	7984	06	7767	03	0008	
01	6.42	207 83011065	0.89	CR 4 Maybrook Rd	5692	12	5704	11	5887	08	6686	05	0007	
01	9.06	207 83011090	2.64	Start 207/208 Olap	3687	12	3687	12	3629	09	4360	06	0513	
01	9.19	207 83011092	0.13	End 207/208 Olap	6317	12	6242	09	7405	06	6171	00	0514	
01	11.12		1.93	Town Of Hamptonburgh & Town Of New Windsor	4854	12	4860	11	4504	08	4280	02	0510	
01	13.73	207 83011138	2.61	RT 747 Int Blvd	5358	12	5364	10	5716	07	6120	04	0515	
01	15.55	207 83011156	1.82	Mount Airy Rd	9498	12	9509	10	10566	07	11174	04	0138	
01	16.50	207 83011165	0.95	Start 207/300 Olap	17032	12	16278	12	17052	11	18521	07	0050	
01	16.89	207 83011169	0.39	End 207/300 Olap	23677	12	23705	10	24530	07	26573	04	0516	
01	19.05	207 83011186	2.16	Wisner Ave	8511	12	8521	10	9125	07	10461	04	0517	
		Route NY208		County 071 ORANGE	Region 08									
01	0.87	208 83011008	0.87	Village Of Monroe & Town Of Monroe	16448	12	16468	10	20697	07	18134	04	0032	
01	3.81	208 83011038	2.94	Town Of Monroe & Village Of South Blooming Grove	15428	12	15447	11	17198	08	16999	05	0031	
01	7.41	208 83011074	3.60	Village Of South Blooming Grove & Town Of Blooming G	8448	12	8448	12	9050	08	9342	05	0522	
01	9.53	208 83011096	2.12	Village Of Washingtonville Town Of Blooming Grove	6819	12	6819	12	6952	09	7512	06	0523	
01	11.05	208 83011111	1.52	Start 207/208 Olap	3390	12	3390	12	3354	09	3679	06	0524	
01	11.18	207 83011092	0.13	End 207/208 Olap	6317	12	6242	09	7405	06	6171	00	0514	
01	13.19	208 83011132	2.01	CR 4 Maybrook Rd	3087	12	3081	11	3552	08	3830	02	0525	

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Traffic Volume Report

County Order	EMP	Ref Marker	Section Length	End Description	LATEST COUNT EST AADT	YR	PREVIOUS COUNTS EST AADT	YR	EST AADT	YR	EST AADT	YR	Station CC Station
		Route NY298		County 067 ONONDAGA	Region 03								
01	1.03		0.22	Genant /W Court	2795	12	2830	10	9940	04	9220	01	0207
01	1.25	298 33011012	0.22	Sunset Ave	4636	12	4648	11	4816	08	4601	05	0030
01	2.73	298 33011027	1.48	Syracuse Cl / Salina Tl	6759	12	6791	10	10207	03	9626	00	0595
01	3.87	298 33012010	1.14	RT 931m	12118	12	12113	08	11747	05	11058	99	0590
01	5.59	298 33012027	1.72	Town Of Salina & Town Of Dewitt	10878	12	10658	07	10244	06	10303	05	0592
01	6.15	298 33012031	0.56	Kinne St	17670	12	17122	97	15728	94	16774	91	0593
01	7.09	298 33012043	0.94	Thruway Is Under No Conn	14281	12	14347	10	16498	07	16125	03	0091
01	7.95	298 33012052	0.86	Fly Rd Collamer	7538	12	7573	10	9795	07	9720	03	0092
01	8.34		0.39	Jct Rt 481l	10265	12	10292	11	10564	08	11083	02	0241
01	9.28	298 33012065	0.94	Town Of Dewitt & Town Of Manlius	8144	12	8220	10	10058	07	8221	05	0093
01	10.96	298 33012064	1.68	Shepps Cor Rd	6749	12	6780	11	6823	08	6498	05	0028
01	14.12	298 33012106	3.16	Town Of Manlius & Town Of Cicero	7075	12	7141	10	7135	06	7920	04	0027
		Route NY299		County 111 ULSTER	Region 08								
01	2.47		2.47	Town Of Gardiner & Town Of New Paltz	2321	12	2311	11	2975	08	3418	06	0039
01	4.83		2.36	Gatehouse Rd	4416	12	4333	09	5011	05	2781	99	0009
01	5.62	299 86011057	0.79	Springtown Rd	7229	12	7094	09	7407	06			0008
01	5.95	299 86011058	0.33	Wurts Ave	10678	12	10551	09	11649	06	10514	99	0573
01	6.46	32 86021117	0.51	Start 32/299 Olap	6637	12	6558	09	15416	08	17801	05	0245
01	7.21	299 86011072	0.75	Village Of New Paltz And Town Of New Paltz	22058	12	21796	09	19060	06	20789	05	0030
01	9.75	299 86011097	2.54	Town Of New Paltz & Town Of Lloyd	18401	12	18362	11	17392	08	20387	05	0575
01	12.55	299 86011125	2.80	RT 9w Highland End RT 299	18135	12	18097	11	14708	08	18023	05	0110
		Route NY300		County 111 ULSTER	Region 08								
01	1.90	300 86011019	1.90	Ulster/Orange Co Line	5810	12	5822	11	6130	08	5481	06	0576
		Route NY300		County 071 ORANGE	Region 08								
02	5.08	300 83021050	5.08	RT 32	6394	12	6375	09	6589	06	5827	03	0577
02	7.01	300 83021069	1.93	RT 52	12203	12	12218	11	12654	08	12695	03	0074
02	7.89	300 83021078	0.88	RT 84l	24893	12	24923	11	37385	07	28324	04	0075
02	8.14	300 83021081	0.25	Acc 87l Nys Thruway	31625	12	31249	09	58887	07	62097	04	0076
02	8.58	300 83021084	0.44	Jct Rt 17k	29829	12	27805	01	27268	98	29303	97	0077
02	9.96	300 83021099	1.38	Town Of Newburgh And Town Of New Windsor	33956	12	33997	11	37120	08	26121	02	0078
02	10.35	207 83011169	0.39	End 207/300 Olap	23677	12	23705	10	24530	07	26573	04	0516
02	12.69	300 83021127	2.34	RT 94 End RT 300	17349	12	17370	10	16324	07	18358	04	0079
		Route NY301		County 079 PUTNAM	Region 08								

New York State Department of Transportation

Date: 7/12/2013

Traffic Volume Report

County Order	EMP	Ref Marker	Section Length	End Description	LATEST COUNT EST AADT	YR	PREVIOUS COUNTS EST AADT	YR	EST AADT	YR	EST AADT	YR	Station	CC Station
		Route I690		**County 067 ONONDAGA**	**Region 03**									
01	2.03	690I33014016	0.66	State Fair Blvd Under	52539	12	47936	06	49003	03	43493	99	0043	
01	4.76	690I33011025	2.73	Rr Under	53976	12	51762	09	47128	05	48757	02	0246	
01	7.14	690I33011034	2.38	Hiawatha Blvd Under	86251	12	77442	05	71439	01	67994	98	0545	
01	7.43		0.29	RT 298 Acc Ramp Under	77332	12	67289	03	60435	00	49320	95	0546	
01	7.75		0.32	Geddes St Under	61581	12	52769	02	48604	98	48054	95	0059	
01	8.39		0.64	West St Acc/Exit Ramps Over	71776	12	64444	05	63146	01	60534	95	0060	
01	9.13		0.74	RT 81i Eb Under	80080	12	68620	02	67378	99	63284	95	0061	
01	9.18		0.05	Mcbride St Eb	90636	12	78865	03	72774	00	69551	95	0062	
01	9.22		0.04	Acc Rt 81l Eb	106183	12	89626	01	89421	98	83059	95	0063	
01	10.33		1.11	Teall Ave Under	131142	12	114111	03	102471	99	93480	95	0064	
01	11.28		0.95	RT 598 Midler Ave Over	104031	12	94917	06	93330	02	87863	98	0065	
01	12.34		1.06	RT 635 Over - Syracuse E City Ln	91494	12	82148	05	81396	01	79343	98	0074	
01	13.20		0.86	RT 930p Bridge St Under	46530	12	42454	06	44840	02	38233	98	0104	
01	13.61		0.41	Acc Ramp To I481 End Rt 690I	57576	12	50099	03	51859	00	42672	95	0075	
		Route NY690		**County 067 ONONDAGA**	**Region 03**									
01	1.84	690 33011012	1.84	CR 159 Van Buren Rd Over	22266	12	21787	10	23318	06	23753	03	0073	
01	4.47		2.63	Start 31/690 Olap	21819	12	20355	06	20424	01	18634	98	0068	
01	5.26		0.79	Town Of Van Buren & Town Of Lysander	17480	12	17480	12	17304	11	17349	10	0069	3382
01	6.77	690 33011083	1.51	RT 48 Church Rd End 690	11412	12	11037	09	11318	01	10743	98	0199	
		Route I695		**County 005 BRONX**	**Region 11**									
01	1.77		1.77	Randall Ave									0015	
		Route NY695		**County 067 ONONDAGA**	**Region 03**									
01	0.46	695 33011003	0.46	Town Camillus Town Geddes	43567	12	42629	10					0230	
01	1.58	695 33011015	1.12	I-690 On/Off Ramps Frm West	48286	12	45586	07	49027	06	53825	04	0135	
01	2.42	695 33011023	0.84	I-690 Frm/To East - End Ny695									0214	
		Route NY747		**County 071 ORANGE**	**Region 08**									
01	1.26	747 83011012	1.26	Stewart Blvd	8242	12	8259	11	7595	10			0003	
01	2.35	747 83011023	1.09	USda Dr	11884	12	11909	11					0041	
01	2.55	747 83011025	0.20	RT I84 Eb Under	9901	12	9922	11					0030	
01	3.48	747 83011034	0.93	NY 17k	7668	12	7684	11	6921	10			0033	
		Route I781		**County 045 JEFFERSON**	**Region 07**									
01	4.74		4.74	US11 & 971q	7248	12	7248	12					0270	

APPENDIX B

New York State Department of Transportation Traffic Count Reports

STATION: **831343**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: 1614 ROAD NAME: STEWART BLVD
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 29
DATE OF COUNT: 07/12/2010
NOTES LANE 0: WK 29 EB

COUNT TAKEN BY: ORG CODE: TST INITIALS: —

FROM: NY 747
REC. SERIAL #: 0026
PLACEMENT: 0.875 MI E OF RT 747
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: BREUNING RD
FUNC. CLASS: 17
NHS: yes
JURIS: Other Auth./Comm.
CC Stn:
BATCH ID: R08-R08CWW29bVol

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	T																											
2	F																											
3	S																											
4	S																											
5	M																											
6	T																											
7	W																											
8	T																											
9	F																											
10	S																											
11	S																											
12	M											96	100	72	106	141	162	100	110	59	44	60	67	32	37			
13	T	17	2	9	12	39	88	165	192	155	119	86	84	88	80	132	155	77	119	65	41	48	43	44	28	1886	192	7
14	W	23	13	19	18	33	95	128	188	135	99	81	72	107	95	119	128	138	107	67	49	60	45	49	43	1909	188	7
15	T	54	3	4	24	35	74	140	182	151	82	72	84	89	86	122	149	98	101	69	58	49	63	55	51	1895	182	7
16	F	15	7	6	19	29	83	133	181	137	100	129	86	97	96	115	152	91	95	63	51	57	74	39	44	1899	181	7
17	S	16	4	3	13	25	57	73	85	37	54	67	69	70	73	85	92	49	56	44	37	64	52	51	42	1198	92	15
18	S	16	3	9	13	27	52	74	50	32	56	37	59	59	64	109	142	61	81	70	59	63	65	40	45	1286	142	15
19	M	6	6	3	21	40	93	167	171																			
20	T																											
21	W																											
22	T																											
23	F																											
24	S																											
25	S																											
26	M																											
27	T																											
28	W																											
29	T																											
30	F																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																						ADT
27	6	10	18	34	84	145	181	142	99	92	84	88	91	126	146	102	108	64	47	53	53	44	49	1884

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
8	166	5	100	181	10%	0.988	1.093	AADT 1724

STATION: **831343**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: 1614 ROAD NAME: STEWART BLVD
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 29
DATE OF COUNT: 07/12/2010
NOTES LANE 0: WK 29 WB

FROM: NY 747
REC. SERIAL #: 0078
PLACEMENT: 0.875 MI E OF RT 747
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: BREUNING RD
FUNC. CLASS: 17
NHS: yes
JURIS: Other Auth./Comm.
CC Stn:
BATCH ID: R08-R08CWW29bVol

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TST INITIALS: —

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	T																											
2	F																											
3	S																											
4	S																											
5	M																											
6	T																											
7	W																											
8	T																											
9	F																											
10	S																											
11	S																											
12	M												85	92	110	129	214	277	231	93	88	64	51	79	24			
13	T	39	19	6	8	10	25	101	115	107	83	81	101	132	102	143	196	245	232	119	86	56	27	30	66	2131	245	16
14	W	11	6	12	17	5	32	108	113	98	82	91	104	116	145	115	204	203	280	129	80	82	55	29	28	2103	280	17
15	T	41	67	15	8	9	30	126	107	88	83	74	87	115	119	121	179	285	214	105	100	60	38	119	36	2224	285	16
16	F	35	10	6	6	6	28	116	86	100	76	87	115	119	124	134	198	261	177	131	95	54	72	69	48	2153	261	16
17	S	37	8	8	5	2	34	71	58	51	48	76	106	104	93	80	91	124	82	82	47	64	38	53	49	1379	124	16
18	S	33	12	15	4	10	15	84	39	38	38	63	83	81	65	77	105	143	83	67	85	47	55	83	28	1313	143	16
19	M	31	4	4	5	5	38	103	84																			
20	T																											
21	W																											
22	T																											
23	F																											
24	S																											
25	S																											
26	M																											
27	T																											
28	W																											
29	T																											
30	F																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																							ADT
32	26	10	9	8	29	110	100	97	75	82	98	113	118	125	196	249	231	111	87	65	42	63	38	2114

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
7	165	4	99	249	12%	0.988	1.093	AADT 1934

STATION: **831342**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: 0117 ROAD NAME: **BREUING RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 12
DATE OF COUNT: 03/16/2009
NOTES LANE 1:

COUNT TAKEN BY: ORG CODE: DOT INITIALS: RXK

FROM: **NY 207**
REC. SERIAL #: AC72
PLACEMENT: Breunig Rd. Intermodel/FC-17
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES

PROCESSED BY: ORG CODE: DOT INITIALS: RXK

TO: **STEWART BLVD**
FUNC. CLASS: 19
NHS: no
JURIS: Other Auth./Comm.
CC Stn:
BATCH ID: DOT-Metrocount

COUNTY: **Orange**
TOWN: **NEW WINDSOR**
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	S																											
2	M																											
3	T																											
4	W																											
5	T																											
6	F																											
7	S																											
8	S																											
9	M																											
10	T																											
11	W																											
12	T																											
13	F																											
14	S																											
15	S																											
16	M											114	143	160	158	134	127	162	170	127	65	62	67	39	18			
17	T	11	7	5	27	47	66	144	160	155	103	110	125	155	161	165	146	156	154	134	100	55	65	64	25	2340	165	14
18	W	10	10	9	25	45	61	143	159	123	112	110	138	165	155	159	143	157	167	171	93	55	64	68	17	2359	171	18
19	T	17	3	9	31	40	60	133	160	131	121	120	151	144	180	149	161	152	139	114	102	62	84	54	17	2334	180	13
20	F	13	5	8	25	44	87	124	172	126	132	123	117	157	209	175	164	155	132	117	57	63	81	41	18	2345	209	13
21	S	10	4	8	17	21	29	82	65	42	69	93	98	92	141	110	76	90	50	67	52	40	38	40	20	1354	141	13
22	S	19	6	9	14	16	25	60	34	26	54	68	106	83	109	108	84	76	89	81	59	47	48	45	18	1284	109	13
23	M	12	4	7	19	26	60	154	187	175	120	83	130															
24	T																											
25	W																											
26	T																											
27	F																											
28	S																											
29	S																											
30	M																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

13	6	8	27	44	68	140	168	142	118	110	134	156	164	152	144	157	158	136	90	58	70	56	19	ADT 2338

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
8	170	5	104	168	7%	1.000	1.018	**AADT 2297**

STATION: **831342**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: 0117 ROAD NAME: BREUING RD
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 12
DATE OF COUNT: 03/16/2009
NOTES LANE 1:

COUNT TAKEN BY: ORG CODE: DOT INITIALS: RXK

FROM: NY 207
REC. SERIAL #: AC72
PLACEMENT: Breunig Rd. Intermodel/FC-17
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: RXK

TO: STEWART BLVD
FUNC. CLASS: 19
NHS: no
JURIS: Other Auth./Comm.
CC Stn:
BATCH ID: DOT-Metrocount

COUNTY: Orange
TOWN: NEW WINDSOR
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	S																											
2	M																											
3	T																											
4	W																											
5	T																											
6	F																											
7	S																											
8	S																											
9	M																											
10	T																											
11	W																											
12	T																											
13	F																											
14	S																											
15	S																											
16	M											93	150	159	111	178	147	195	153	98	87	64	52	78	57			
17	T	10	8	4	15	23	59	106	132	105	77	86	117	147	140	169	202	145	157	106	106	57	54	101	48	2174	202	15
18	W	20	5	7	12	23	75	102	107	99	101	97	115	145	135	166	186	132	151	118	106	50	65	100	42	2159	186	15
19	T	15	7	9	14	19	57	91	121	111	89	99	137	175	142	152	188	155	131	100	90	52	66	109	46	2175	188	15
20	F	9	9	7	11	29	64	117	127	115	97	99	121	167	135	189	165	161	135	85	82	57	49	88	50	2168	189	14
21	S	22	6	3	10	15	27	34	34	53	54	61	82	109	89	132	104	103	85	59	48	39	29	75	19	1292	132	14
22	S	15	8	9	6	5	27	29	26	24	34	45	89	100	81	116	96	93	109	78	68	54	31	87	34	1264	116	14
23	M	11	10	6	8	18	54	106	114	101	102	68	111															
24	T																											
25	W																											
26	T																											
27	F																											
28	S																											
29	S																											
30	M																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

14	7	7	13	24	64	104	120	106	93	90	125	156	132	166	181	157	148	106	97	56	59	97	48	ADT 2170

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
8	170	5	104	181	8%	1.000	1.018	**AADT 2132**

ROAD #: 0117 ROAD NAME: BREUING RD FROM: NY 207 TO: STEWART BLVD COUNTY: Orange
STATION: 831342 STATE DIR CODE: 2 PLACEMENT: Breunig Rd. Intermodel/FC-17 DATE OF COUNT: 03/16/2009

STATION: **830041**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: NY 747 ROAD NAME: INTERNATIONAL B
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 24
DATE OF COUNT: 06/13/2011
NOTES LANE 0: NB Travel Lane and NB Passing Lane Two total lane

COUNT TAKEN BY: ORG CODE: TST INITIALS: —

FROM: STEWART BLVD
REC. SERIAL #: 0007
PLACEMENT: 0.5 mi N of Stewart Blvd
@ REF MARKER: 747 83011018
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: I-84 EB RAMPS
FUNC. CLASS: 17
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-R08CWW25bVol

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M											300	287	345	296	461	544	589	597	402	230	200	132	86	56			
14	T	80	19	22	43	51	181	358	487	426	274	313	299	323	326	485	611	589	560	362	288	213	147	81	119	6657	611	15
15	W	58	22	17	21	57	176	376	520	468	370	324	347	350	332	501	627	661	592	424	249	196	158	149	67	7062	661	16
16	T	52	21	18	22	57	161	380	488	425	326																	
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

62	21	19	29	54	171	367	492	435	319	308	307	335	314	476	587	606	576	391	253	201	144	104	80	ADT 6651

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
4	72	4	72	606	9%	0.988	1.105	**AADT 6019**

STATION: **830041**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: NY 747 ROAD NAME: INTERNATIONAL B
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 24
DATE OF COUNT: 06/13/2011
NOTES LANE 0: SB Travel Lane and SB Passing Lane Two total lane

COUNT TAKEN BY: ORG CODE: TST INITIALS: —

FROM: STEWART BLVD
REC. SERIAL #: 0026
PLACEMENT: 0.5 mi N of Stewart Blvd.
@ REF MARKER: 747 83011018
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: I-84 EB RAMPS
FUNC. CLASS: 17
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-R08CWW25bVol

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M											301	294	274	350	399	436	490	503	354	267	200	164	134	73			
14	T	30	16	19	40	106	162	371	563	520	305	279	272	289	359	405	466	458	503	353	260	237	175	123	85	6396	563	7
15	W	31	27	26	32	97	149	395	582	516	335	337	310	333	368	466	440	551	501	384	249	211	192	176	80	6788	582	7
16	T	46	18	20	31	102	158	398	566	487	332																	
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

36	20	22	34	101	154	383	563	502	320	302	288	295	355	418	442	494	496	360	256	213	175	142	78	ADT 6449

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
4	72	4	72	563	9%	0.988	1.105	**AADT 5836**

STATION: **830003**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: NY 747 ROAD NAME: INTERNATIONAL B
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 24
DATE OF COUNT: 06/13/2011
NOTES LANE 1: NB Travel Lane

COUNT TAKEN BY: ORG CODE: TST INITIALS: —

FROM: NY 207
REC. SERIAL #: 0071
PLACEMENT: 0.814 mi N of RT 207
@ REF MARKER: 747 83011008
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: STEWART BLVD
FUNC. CLASS: 17
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-R08CWW25bVol

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M											209	187	236	200	281	385	368	381	247	170	140	99	55	38			
14	T	25	13	14	19	41	125	289	388	337	204	228	202	225	215	297	381	382	347	262	164	146	98	62	44	4508	388	7
15	W	30	14	7	13	38	114	293	408	350	257	223	245	189	247	291	406	427	382	289	171	146	107	62	45	4754	427	16
16	T	27	14	9	19	36	111	280	395	343	232																	
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
27	14	10	17	38	116	284	392	339	228	217	208	214	218	287	386	387	366	263	166	142	100	59	41	4519

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
4	72	4	72	392	9%	0.988	1.105	AADT 4090

STATION: **830003**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: NY 747 ROAD NAME: INTERNATIONAL B
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 24
DATE OF COUNT: 06/13/2011
NOTES LANE 1: SB Travel Lane

COUNT TAKEN BY: ORG CODE: TST INITIALS: ---

FROM: NY 207
REC. SERIAL #: 0059
PLACEMENT: 0.814 mi N of RT 207
@ REF MARKER: 747 83011008
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: STEWART BLVD
FUNC. CLASS: 17
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-R08CWW25bVol

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M											215	200	200	233	270	332	374	389	282	225	161	136	94	35			
14	T	22	10	16	18	31	84	235	382	352	205	209	201	214	225	271	361	365	402	281	203	191	141	70	49	4538	402	17
15	W	23	19	20	13	29	77	243	397	352	220	231	210	236	249	322	325	436	402	314	202	166	143	109	50	4788	436	16
16	T	36	15	16	17	33	82	246	389	334	216																	
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

27	15	17	16	31	80	238	384	342	211	215	202	214	233	285	335	387	393	288	207	171	138	90	44	ADT 4563

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
4	72	4	72	393	9%	0.988	1.105	**AADT 4129**

STATION: **830050**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: NY 207 ROAD NAME:
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 24
DATE OF COUNT: 06/13/2011
NOTES LANE 1: EB Travel Lane

COUNT TAKEN BY: ORG CODE: TST INITIALS: ---

FROM: AIRPORT ENTRANCE BRUNIG RD
REC. SERIAL #: 0061
PLACEMENT: 0.48 mi W of RT 300
@ REF MARKER: 207 83011162
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: START RT 300 OLAP
FUNC. CLASS: 16
NHS: yes
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-R08CWW25bVol

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE: 69380410

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M													583	651	621	623	645	677	607	497	339	260	167	120	93		
14	T	86	31	37	42	61	177	479	652	634	594	579	600	655	550	660	678	662	681	494	401	270	215	106	114	9458	681	17
15	W	64	27	22	33	88	210	459	612	704	571	539	652	712	570	652	697	715	668	536	375	324	226	173	88	9717	715	16
16	T	76	35	23	27	73	209	460	662	601	547	557																
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																							ADT
74	31	27	33	73	196	459	632	636	562	550	603	663	571	635	663	675	642	501	366	281	200	131	97	9301

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
4	72	4	72	675	7%	0.985	1.105	**AADT 8417**

STATION: **830050**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: NY 207 ROAD NAME:
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 24
DATE OF COUNT: 06/13/2011
NOTES LANE 1: WB Travel Lane
COUNT TAKEN BY: ORG CODE: TST INITIALS: —

FROM: AIRPORT ENTRANCE BRUNIG RD TO: START RT 300 OLAP
REC. SERIAL #: 0078 FUNC. CLASS: 16
PLACEMENT: 0.48 mi W of RT 300 NHS: yes
@ REF MARKER: 207 83011162 JURIS: NYSDOT
ADDL DATA: CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R08CWW25bVol
PROCESSED BY: ORG CODE: DOT INITIALS: jh

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE: 69380410

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M													548	632	642	654	667	875	789	547	409	339	255	156	130			
14	T	95	46	40	43	66	145	281	484	574	474	495		546	602	690	693	689	837	794	550	423	350	296	182	136	9531	837	16
15	W	74	34	26	30	79	134	312	505	571	518	537		595	686	680	684	693	813	771	606	505	401	314	198	123	9889	813	16
16	T	94	42	24	37	78	152	341	465	506	486	511																	
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
87	40	30	36	73	142	306	478	542	486	506	555	630	661	667	673	829	773	559	439	358	284	176	128	9458

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
4	72	4	72	829	9%	0.985	1.105	AADT 8559

New York State Dep[illegible]nent of Transportation

Traffic Count Hourly Report

ROUTE #: NY 300 ROAD NAME:
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 23
DATE OF COUNT: 06/07/2011
NOTES LANE 1: EB Travel Lane/two total lanes EB
NOTES LANE 2: EB Passing Lane/two total lanes EB
COUNT TAKEN BY: ORG CODE: TST INITIALS: —

FROM: JCT RT 17K
REC. SERIAL #: 2629
PLACEMENT: 0.382 mi N of RT 207
@ REF MARKER: 300 83021095
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: SJW

TO: START RT 207 OLAP
FUNC. CLASS: 16
NHS: yes
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-SJWR8ww24

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE: 69380420

DATE	DAY	12 TO 1 (AM)	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1 (PM)	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T											1033	1188	1263	1336	1314	1210	1427	1542	1259	985	895	669	453	304			
8	W	145	68	55	68	135	274	540	971	1088	946	1021	1093	1263	1372	1281	1375	1376	1488	1195	1110	998	736	467	299	19364	1488	17
9	T	186	103	60	74	130	254	549	990	1149	922	1062	1214	1247	1410	1364	1298	1322	1408	1248	946	760	728	379	298	19101	1410	13
10	F	149	111	54	104	119	260	547	935	1097	1087	1094	1179	1287	1359	1419	1371	1427	1514	1219	1112	1095	880	653	473	20545	1514	17
11	S	264	189	132	85	100	162	256	468	670	825	1061	1295	1404	1330	1409	1360	1294	1228	1099	983	844	721	513	380	18072	1409	14
12	S	224	120	92	83	66	124	145	223	427	625	845	1023	1171	1305	1282	1247	1249	1116	1033	805	624	387	349	199	14764	1305	13
13	M	131	47	50	60	115	263	559	1099	1333	1076	1074	1163	1295	1384	1316	1356	1522	1424	1187	874	776	632	362	295	19393	1522	16
14	T	184	97	66	68	134	218	548	944	1080	930	1076	1077	1233	1375	1306	1308	1495	1520									
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

166	95	59	78	130	252	549	988	1149	992	1060	1152	1260	1375	1316	1309	1428	1476	1222	979	857	691	415	299	ADT 19297

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED AADT
7	176	4	110	1476	8%	1.000	1.105	17463

STATION: **830078**

New York State Department of Transportation

Traffic Count Hourly Report

ROUTE #: NY 300 ROAD NAME:
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 23
DATE OF COUNT: 06/07/2011
NOTES LANE 1: WB Travel Lane/two total lanes WB
NOTES LANE 2: WB Passing Lane/two total lanes WB
COUNT TAKEN BY: ORG CODE: TST INITIALS: —

FROM: JCT RT 17K
REC. SERIAL #: 2625
PLACEMENT: 0.382 mi N of RT 207
@ REF MARKER: 300 83021095
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: SJW

TO: START RT 207 OLAP
FUNC. CLASS: 16
NHS: yes
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-SJWR8ww24

COUNTY: Orange
TOWN: NEW WINDSOR
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE: 69380420

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T											1023	1159	1364	1168	1189	1206	1364	1386	1113	927	692	443	315	197			
8	W	96	43	40	48	109	331	734	980	1037	1140	1123	1169	1370	1166	1170	1287	1310	1460	1220	895	720	589	339	221	18597	1460	17
9	T	138	41	28	58	112	324	713	990	1129	1098	1097	1294	1446	1177	1219	1306	1197	1274	1162	801	611	466	256	186	18123	1446	12
10	F	134	64	57	100	108	291	573	986	1147	1089	1179	1388	1331	1291	1294	1368	1349	1398	1327	984	763	825	689	292	20027	1398	17
11	S	254	156	100	35	60	161	334	546	758	1077	1266	1391	1439	1363	1324	1250	1157	1104	1021	839	614	526	394	257	17426	1439	12
12	S	177	100	81	51	53	88	170	293	536	723	1029	1166	1258	1225	1338	1234	1020	895	754	535	474	328	237	158	13923	1338	14
13	M	100	51	32	53	92	276	675	925	1106	1092	1108	1208	1256	1231	1223	1301	1369	1383	1041	773	607	435	274	173	17784	1383	17
14	T	120	63	41	74	107	272	693	949	1049	1063	1127	1234	1299	1272	1335	1393	1359	1363									
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
122	53	42	70	109	304	678	966	1094	1096	1110	1242	1347	1203	1227	1299	1320	1373	1134	849	658	483	296	194	18269

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
7	176	4	110	1373	8%	1.000	1.105	AADT 16533

APPENDIX C

Historic Traffic Growth Rate Tables

Historic Traffic Growth Rates Tables

Estimated growth rate in traffic volume during the period which includes most recent traffic data and historic traffic data around 2002

ROUTE 207 (Little Britain Road)	CONTINUOUS COUNTING (CC) STATION	RECENT TRAFFIC DATA AADT (Veh/Day)	RECENT TRAFFIC DATA COUNT YEAR	HISTORIC TRAFFIC DATA AADT (Veh/Day)	HISTORIC TRAFFIC DATA COUNT YEAR	TRAFFIC GROWTH RATE
North & South Church Street	0092	10760	2012	14801	2004	-3.41%
CR66 Craigville Rd	0020	14100	2012	13907	2005	0.20%
Cr 8 Sarah Wells Trl	0134	9484	2012	11865	2004	-2.51%
Village of Goshen and Town of Goshen	0008	6940	2012	7767	2003	-1.18%
CR4 Maybrook Rd	0007	5692	2012	6686	2005	-2.12%
Start 207/208 Olap	0513	3687	2012	4360	2006	-2.57%
End 207/208 Olap	0514	6317	2012	6171	2000	0.20%
Town of Hamtonburgh & Town of New Windsor	0510	4854	2012	4280	2002	1.34%
RT 747	0515	5358	2012	6120	2004	
Mount Airy Rd	0138	9498	2012	11174	2004	-1.87%
Start 207/300 Olap	0050	17032	2012	18521	2007	
End 207/300 Olap	0516	23677	2012	26573	2004	-1.36%
Wisner Ave	0517	8511	2012	10461	2004	-2.33%
	ROUTE 207 CORRIDOR AVERAGE TRAFFIC GROWTH RATE:					***-1.45%***
	STUDY AREA AVERAGE TRAFFIC GROWTH RATE:					

ROUTE 300 (UNION AVENUE)	CONTINUOUS COUNTING (CC) STATION	RECENT TRAFFIC DATA AADT (Veh/Day)	RECENT TRAFFIC DATA COUNT YEAR	HISTORIC TRAFFIC DATA AADT (Veh/Day)	HISTORIC TRAFFIC DATA COUNT YEAR	TRAFFIC GROWTH RATE
RT 32	0577	6394	2012	5827	2003	1.08%
RT 52	0074	12203	2012	12695	2003	-0.43%
RT I-84	0075	24893	2012	28324	2004	-1.51%
Acc I-87 NYS Thruway	0076	31625	2012	62097	2004	
Jct RT 17K	0077	29829	2012	27805	2001	
Town of Newburgh & Town of New Windsor	0078	33956	2012	26121	2002	3.00%
End 207/300 Olap	0516	23677	2012	26573	2004	-1.36%
RT 94 end RT 300	0079	17349	2012	18358	2004	-0.69%
	ROUTE 300 CORRIDOR AVERAGE TRAFFIC GROWTH RATE:					***-0.67%***
	STUDY AREA AVERAGE TRAFFIC GROWTH RATE:					

ROUTE 747 (DRURY ROAD)	CONTINUOUS COUNTING (CC) STATION	RECENT TRAFFIC DATA AADT (Veh/Day)	RECENT TRAFFIC DATA COUNT YEAR	HISTORIC TRAFFIC DATA AADT (Veh/Day)	HISTORIC TRAFFIC DATA COUNT YEAR	TRAFFIC GROWTH RATE
Stewart Blvd	0003	8242	2012	8259	2011	
Usda DR	0041	11884	2012	11909	2011	
RT I-84 EB under	0030	9901	2012	9922	2011	
NY17k	0033	7668	2012	7684	2011	-0.21%
	ROUTE 747 CORRIDOR AVERAGE TRAFFIC GROWTH RATE:					***-0.21%***
	STUDY AREA AVERAGE TRAFFIC GROWTH RATE:					

ROUTE 17K	CONTINUOUS COUNTING (CC) STATION	RECENT TRAFFIC DATA AADT (Veh/Day)	RECENT TRAFFIC DATA COUNT YEAR	HISTORIC TRAFFIC DATA AADT (Veh/Day)	HISTORIC TRAFFIC DATA COUNT YEAR	TRAFFIC GROWTH RATE
RT 17	0163	4286	2012	4925	2003	-1.44%
RT 302 Bullville	0674	4798	2012	5158	2006	-1.16%
CR 14 Albany Post Rd	0133	5909	2012	5709	2006	0.58%
RT 211 Montgomery	0676	13773	2012	15745	2004	-1.57%
Village of Montgomery & Town of Montgomery	0677	11995	2012	14782	2004	-2.36%
CR 75 Coldenham Rd	0678	9054	2012	10553	2005	-2.03%
RT 747 Inter Blvd	0155	12841	2012	16758	2004	-2.92%
Lakeside Rd	0055	16854	2012	23914	2004	-3.69%
RT 300 Union Ave	0070	16340	2012	17510	2003	[illegible]
Acc RT I87	0047	22977	2012	21957	2000	[illegible]
City of Newburgh	0154	20919	2012	19865	2004	0.66%
RT 207 Wisner Avenue	0679	12979	2012	18227	2004	-3.60%
West St	0303	17011	2012	15815	2003	0.84%
Prospect Ave	0238	20337	2012	18273	2007	2.26%
	ROUTE 17K CORRIDOR AVERAGE TRAFFIC GROWTH RATE:					***-1.06%***
	[illegible]					[illegible]

APPENDIX D

Traffic Volume Comparison for PM Peak Period: (NYIP Study vs. NYSDOT Traffic Data)

Traffic Volume Comparison for PM Peak Period on Route 207: (NYIP Study vs. NYSDOT Traffic Data)

Traffic Volume Comparison for PM Peak Period: (NYIP Study vs. Newburgh Area Study)

Traffic Volume Comparison for PM Peak Period: (NYIP Study vs. Crystal Run Healthcare Study)

Traffic Volume Comparison for Weekday PM Peak Period: (NYIP Study vs. NYSDOT Traffic Data)

2015 Background Volume Comparison between New York International Plaza Traffic Impact Study (2002) and New York State DOT Continuous Count Station Data

Route		Route 207	Route 207
Locations		Between Drury Road and Breunig Road	Between Breunig Road and Route 300
Continuous Count Station		0515	0050
2015 Anticipated Background Volume* (E/B or N/B) (Veh/Hr)		485	525
2015 Anticipated Background Volume* (W/B or S/B) (Veh/Hr)		600	995
2015 Anticipated Background Total Volume* (Veh/Hr)		1085	1520
DOT Existing Volume (Base Year Different)**	Veh/Hr	863	1504
	Count Year	2011	2011
Projected 2015 DOT Existing Volume *** (Veh/Hr)		809	1407
% Difference of NYIP Study Anticipated Volumes vs. DOT Volumes****		-25%	-7%

*2015 Projected background volumes from the New York International Plaza at New Windsor Traffic Impact Study done in 2002

**NYS DOT ATR counts for PM Peak hour (4PM - 5PM)

***2015 Projected volumes are extrapolated using rates based on NYS DOT 2012 Traffic Volume Report

****Difference is calculated using 2015 extrapolated volumes

Traffic Volume Comparison for Weekday PM Peak Period: (NYIP Study vs. NYSDOT Traffic Data)

2015 Background Volume Comparison between New York International Plaza Traffic Impact Study (2002) and NYSDOT Traffic Data Volume Record (2012)

Intersections	Route 207 at East of Route 747	Route 207 at East of Breunig Road	Route 207 at East of Route 300
2015 Background Traffic Volume* (Veh/Hr) on Route 207	1112	1680	2460
Decrease in traffic Growth on Route 207** (Veh/Hr)	15.01%	15.01%	15.01%
Newly Anticipated Volumes on Route 207 in 2015***(Veh/Hr)	945	1428	2091
Difference in Anticipated Volumes between 2002 NYIP Traffic Impact Study vs. 2015 NYSDOT Anticipated Projection Rates***	167	252	369

*2015 Projected background volumes from the New York International Plaza at New Windsor Traffic Impact Study done in 2002

**2015 Traffic growth extrapolated using rates based on NYS DOT 2012 Traffic Data Volume Report (-1.58% annual traffic decrease/year over 9.5 years)

***Difference is calculated using 2015 extrapolated volumes

Traffic Volume Comparison for Weekday PM Peak Period: (NYIP Study vs. Newburgh Area Study)

2015 Background Volume Comparison between New York International Plaza Traffic Impact Study (2002) and Newburgh Area Transp. & Land Use Study (2012)

Intersections	Route 207 at Drury Road (Route 747)	Route 207 at Breunig Road	Route 207 at Route 300
2015 Anticipated Background Volume* (Veh/Hr)	1345	1690	3530
2010 Existing Volume** (Veh/Hr)	1477	1361	3025
Projected 2015 Existing Volume***(Veh/Hr)	1362	1251	2781
% Difference of Anticipated Volumes between 2002 NYIP Traffic Impact Study vs. 2012 Newburgh Area Traffic Study****	1%	-26%	-21%

*2015 Projected background volumes from the New York International Plaza at New Windsor Traffic Impact Study done in 2002
**2010 traffic volume data collected for the Newburgh Area Transportation & Land Use Study
***2015 Projected volumes are extrapolated using rates based on NYS DOT 2012 Traffic Volume Report
****Difference is calculated using 2015 extrapolated volumes

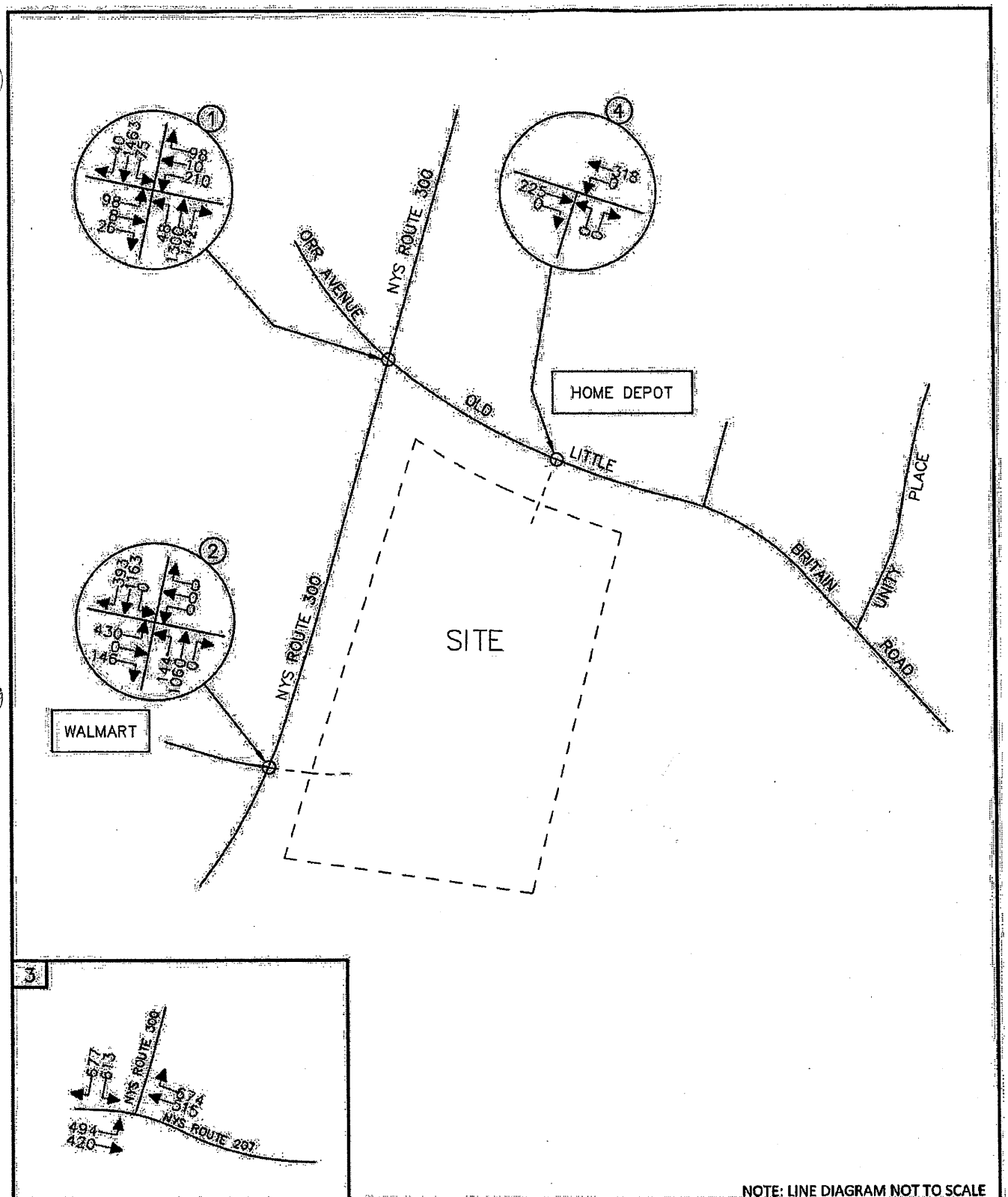
Traffic Volume Comparison for Weekday PM Peak Period: (NYIP Study vs. Crystal Run Heathcare Study)

Intersections	Route 207 at Route 300
2015 Anticipated Background Volume* (Veh/Hr)	3530
2013 Existing Volume** (Veh/Hr)	3393
Projected 2015 Volume***(Veh/Hr)	3461
% Difference in 2015 Volume	-2%

*2015 Projected background volumes from the New York International Plaza at New Windsor Traffic Impact Study done in 2002
**2013 traffic volume data collected for the Crystal Run Healthcare project
***2015 Projected volume is the sum of 2013 existing volume and the site generated trip

APPENDIX E

Existing and Project-Generated Traffic Volumes for Crystal Run Healthcare Study



NOTE: LINE DIAGRAM NOT TO SCALE

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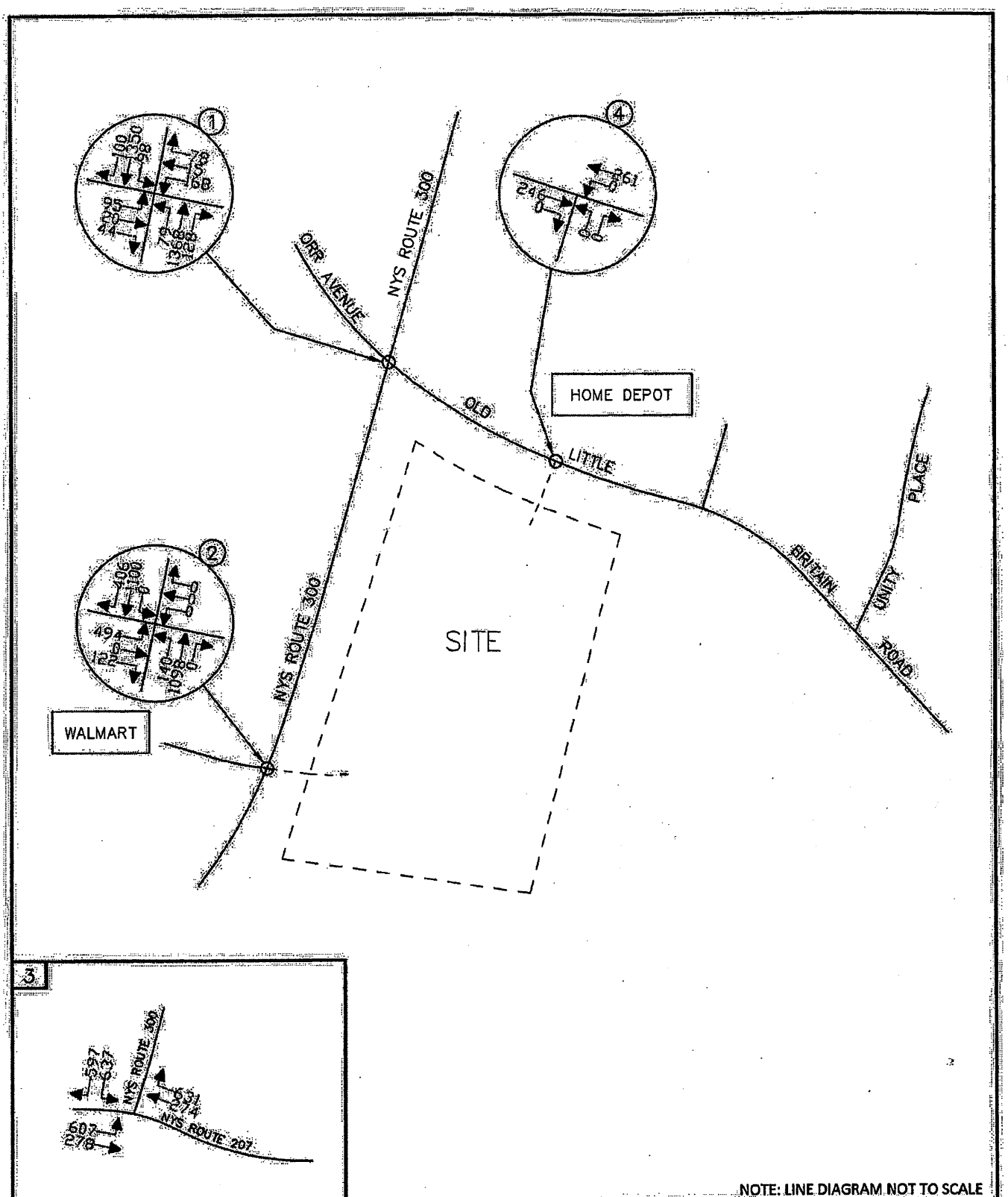
CRYSTAL RUN HEALTHCARE
TOWN OF NEWBURGH, NEW YORK

2013 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
13001363A	08/20/2013
FIGURE NUMBER:	
2	



NOTE: LINE DIAGRAM NOT TO SCALE

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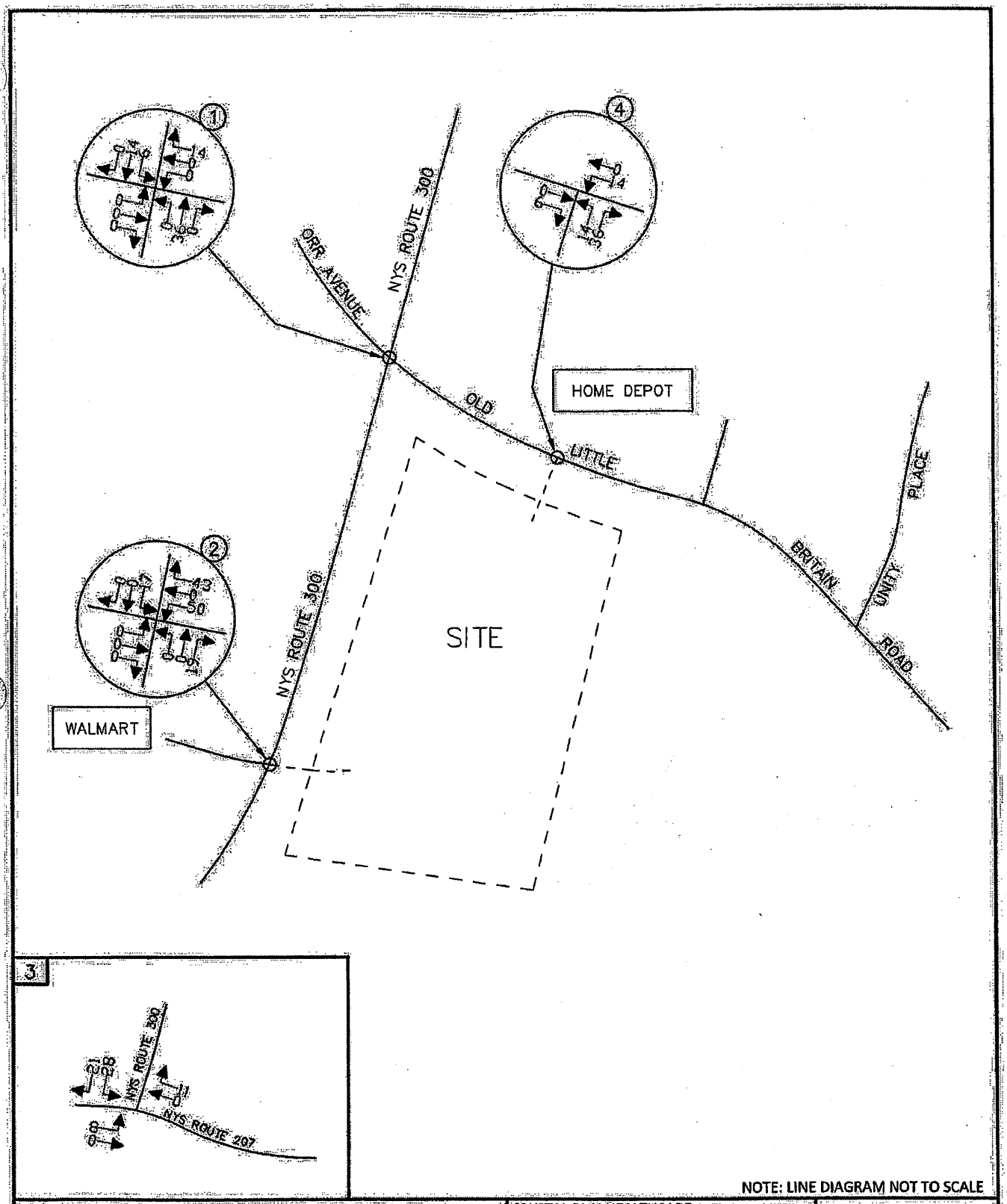
CRYSTAL RUN HEALTHCARE
TOWN OF NEWBURGH, NEW YORK

2013 EXISTING TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HOUR

JOB NUMBER:	DATE:
13001363A	08/20/2013

FIGURE NUMBER: 3



NOTE: LINE DIAGRAM NOT TO SCALE

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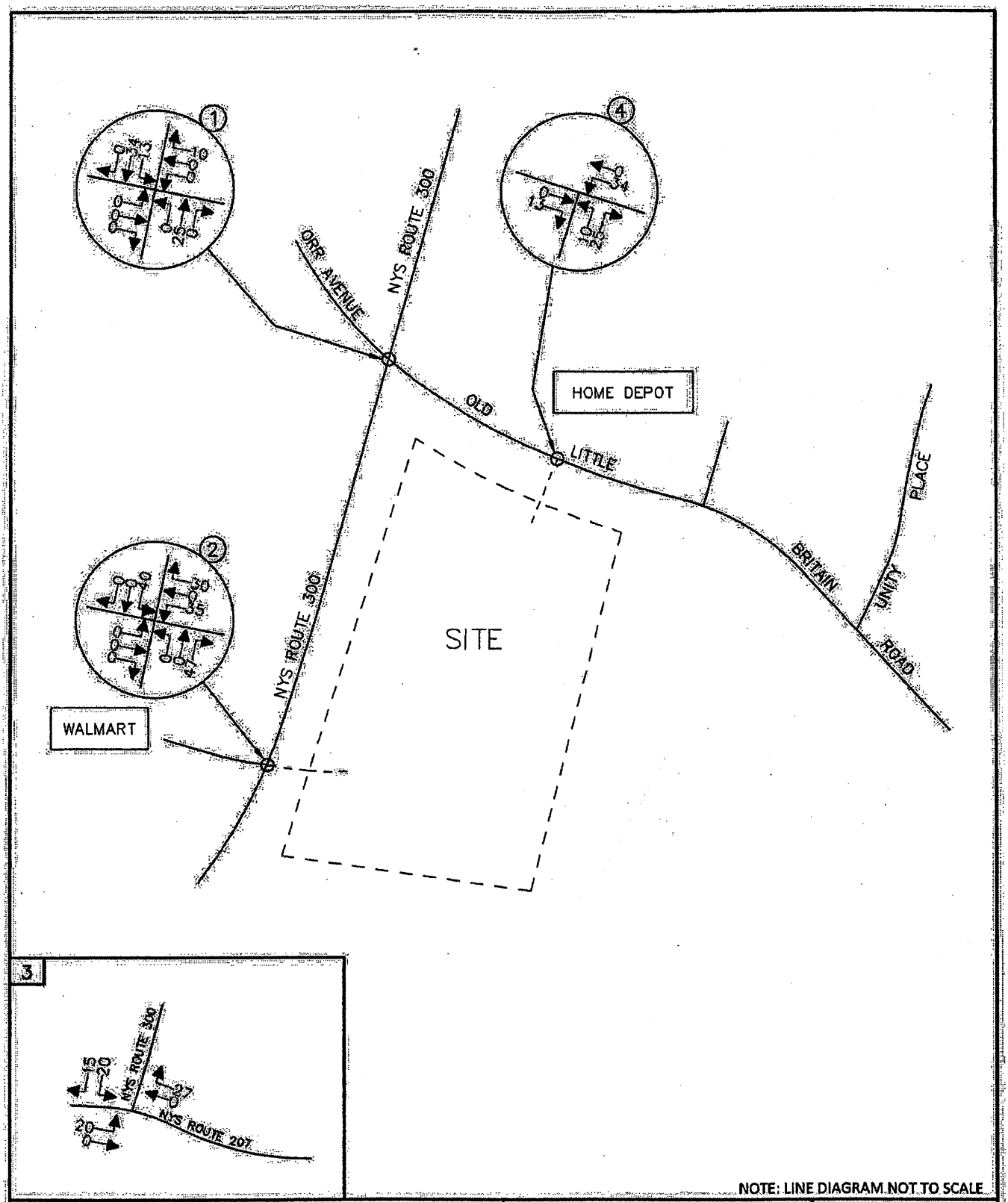
CRYSTAL RUN HEALTHCARE
TOWN OF NEWBURGH, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
13001363A	08/20/2013
FIGURE NUMBER:	
12	



NOTE: LINE DIAGRAM NOT TO SCALE

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CRYSTAL RUN HEALTHCARE
TOWN OF NEWBURGH, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HOUR

JOB NUMBER:	DATE:
13001363A	08/20/2013
FIGURE NUMBER:	
13	

APPENDIX F

Traffic Volume Comparison for Weekday PM vs. Saturday Peak Period

Traffic Volume Comparison for Saturday Peak Period: NYSDOT Traffic Data (Weekday PM vs. Saturday)

Volume Comparison between Weekday vs. Saturday

Route		Breunig Road	International Blvd.
Locations		Between Route 207 and International Blvd.	Between Route 747 and Breunig Road
Continuous Count Station		831342	831343
DOT Existing Volume for Weekday PM Peak *	Veh/Hr	314	351
DOT Existing Volume for Saturday Peak **	Veh/Hr	242	165
Difference of Background Volume: Weekday PM Peak vs. Saturday Peak		-72	-186
Weekday PM vs. Saturday Difference Rate		-23%	-53%
Anticipated Trip Generation for Weekday PM Peak***	Veh/Hr	393	2226
Anticipated Trip Generation for Saturday Peak****	Veh/Hr	453	2569
Difference of Trip Generation: Weekday PM Peak vs. Saturday Peak		60	343
Net Difference in Volume		-12	157

*NYS DOT ATR counts for Weekday PM Peak hour (4PM - 5PM)
**NYS DOT ATR counts for Saturday Peak hour (2PM - 3PM)
***Trip Generation of Greenetrack, Inc. at New Windsor, which includes casino and shopping center components for weekday PM peak hour. Trips are distributed: 15% on Breunig Road and 85% on International Blvd. See Table 1 in report.
****Trip Generation of Greenetrack, Inc. at New Windsor, which include casino and shopping center components for Saturday peak hour. Trips are distributed: 15% on Breunig Road and 85% on International Blvd. See Table 2 in report.

APPENDIX G

Trip Generation Calculation using Rates from Various Casino-Development Studies

TRIP GENERATION FOR SARAGOTA GAMING AND RACING					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Video Gaming** *Traffic derived* *Person Trip Rates*	*700* *Gaming Positions*	*0.425*	50.0% 149	50.0% 149
2	**Hotel** *ITE Land Use:310*	118 Room	0.525	58.1% 36	41.9% 26
3	**Restaurants** *ITE Land Use:932*	300 Seats	0.693	55.8% 116	44.2% 92
4	**Night Club** *ITE Land Use: 492*	*5,000* *Square Ft*	*15.400*	67.5% 52	32.5% 25
PROJECT GENERATED VEHICULAR TRIPS				353	292

Reference: 1. Traffic Evaluation & Supplemental Traffic Evaluation SARATOGA GAMING AND RACEWAY proposed facility expansion.
2. ITE Trip Generation 7th Edition

Note: The traffic generated by the proposed expansion of the SGR facility was estimated based on existing ATR counts at access driveways

TRIP GENERATION FOR 3600 POSITIONS GAMING FACILITY USING SARATOGA RATES					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Gaming Positions - Casino**	*3,600* *Gaming Positions*	*0.425*	50.0% 765	50.0% 765
PROJECT GENERATED VEHICULAR TRIPS				765	765

TRIP GENERATION FOR CROSSROADS RESORT AND SPA					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Casino** *Traffic derived Person Trip Rates*	*5,000 Gaming Positions*	*0.212*	59.0% 625	41.0% 435
2	**Hotel** *ITE Land Use:310*	350 Room	0.700	48.6% 119	51.4% 126
3	**Fitness Club/(Spa)** *ITE Land Use: 492*	*30,000 Square Ft*	*4.050*	51.0% 62	49.0% 60
PROJECT GENERATED VEHICULAR TRIPS				806	620

Reference: 1. Rates provided by the PENNDOT approved Penn National Race Course Expansion traffic impact study (September, 2004)
2. ITE TRIP GENERATION HANDBOOK - 7th Edition

Note: The traffic generated based on projected current volumes to design in year 2018.

TRIP GENERATION FOR 3600 POSITIONS GAMING FACILITY USING CROSSROADS RATES					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Gaming Positions - Casino**	*3,600 Gaming Positions*	*0.212*	59.0% 450	41.0% 313
PROJECT GENERATED VEHICULAR TRIPS				450	313

TRIP GENERATION FOR AQUEDUCT RACE TRACK					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Video Lottery Terminals** *Traffic derived* *Person Trip Rates*	*4,500* *VLTs*	*0.328*	51.9% 765	48.1% 709
PROJECT GENERATED VEHICULAR TRIPS				765	709

Reference: 1. Traffic Study for the Acqueduct Racetrack's proposed Video Lottery Terminals prepared for New York Racing Association by Phillip Habbib & Associates.
2. ITE TRIP GENERATION HANDBOOK

Note: Traffic demand in weekday PM peak hours was assigned to and various entrances into Aqueduct based on existing patterns

TRIP GENERATION FOR 3600 POSITIONS GAMING FACILITY USING AQUEDUCT RATES					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Gaming Positions - Casino**	*3,600* *Gaming Positions*	*0.328*	51.9% 612	48.1% 567
PROJECT GENERATED VEHICULAR TRIPS				612	567

RECALIBRATION OF TRIP GENERATION MODEL FOR LAS VEGAS HOTEL/CASINOS

TRIP GENERATION RESORT CORRIDOR HOTEL/CASINO SINGLE-VARIABLE EQUATION

PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*[1]	BUILD TRAFFIC VOLUMES *Friday PM Peak* IN	OUT
1	**Gaming Positions - Casino**	*3,600*	*0.463*	48.0% 800	52.0% 867
PROJECT GENERATED VEHICULAR TRIPS				800	867

TRIP GENERATION LOCAL HOTEL/CASINO SINGLE-VARIABLE EQUATION

PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*[2]	BUILD TRAFFIC VOLUMES *Friday PM Peak* IN	OUT
1	**Gaming Positions - Casino**	*3,600*	*0.588*	52.0% 1101	48.0% 1016
PROJECT GENERATED VEHICULAR TRIPS				1101	1016

Reference: ITE Journal, May 2002
Curtis D. Rowe, Mohamed S. Kaseko and Kenneth W. Ackert

Note: An update trip generation study for Las Vegas hotel/casinos used number of gaming positions as an independent variable.
1. Average trip rate was used because use of the best fit equation produced a rate out of the range
2. Equation was used to determine trip rate

GAMING CASINO TRAFFIC

TRIP GENERATION CASINO St. CHARLES PEAK HOUR RATE OF VEHICULAR TRAFFIC FLOW PER GAMING POSITION					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Gaming Positions - Casinos**	*3,600*	*0.430*	44.2% 684	55.8% 864
PROJECT GENERATED VEHICULAR TRIPS				684	864

TRIP GENERATION EVENING PEAK HOUR CASINO QUEEN VEHICULAR TRAFFIC					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Gaming Positions - Casinos**	*3,600*	*0.570*	50.9% 1044	49.1% 1008
PROJECT GENERATED VEHICULAR TRIPS				1044	1008

Reference: ITE Journal, March 1998
Paul C. Box and William Bunte

Note: Traffic volume studies of two gaming casinos - the Casino St. Charles and the Casino Queen

GAMING CASINO TRAFFIC

HDR ANALYSIS OF FIVE CASINOS ST. LOUIS - AVERAGE TRIP GENERATION PER SLOT MACHINE PEAK HOUR RATE OF VEHICULAR TRAFFIC					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	Gaming Positions - Casinos	*3,600*	*0.590*	52.5% 1115	47.5% 1009
PROJECT GENERATED VEHICULAR TRIPS				1115	1009

Reference: Trip Generation Characteristics of Small to Medium Sized Casinos by Michael Trueblood, Tara Gude

MOUNTAIN RESORT AND CASINO, TOWN OF THOMPSON, NY - REGIONAL TRAFFIC IMPACT ANALYSIS					
CME ANALYSIS OF REGIONAL TRAFFIC IMPACT - TRIP GENERATION PER SLOT MACHINE DURING PEAK HOUR RATE OF VEHICULAR TRAFFIC					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	**Gaming Positions - Casinos**	*3,600*	*0.332*	45.7% 546	54.3% 649
PROJECT GENERATED VEHICULAR TRIPS				546	649

Reference: 1. Regional Traffic Impact Analysis for Mountain Resort and Casino Town of Thompson, NY prepared by Creighton Manning Engineering, LLP Albany, NY during April, 2004 (CME Project No. 00-058)
2. ITE Trip Generation 7th Edition

Note: This impact analysis study report submitted to Garigliano Law Office, LP 449 Broadway PO Drawer 1069 Monticello, NY 12701-1069

TRIP GENERATION FOR HARRAH'S NARRAGANSETT CASINO					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	CASINO *Traffic derived* *Person Trip Rates*	*3,800* *Gaming Positions*	*0.339*	50.0% 645	50.0% 645
PROJECT GENERATED VEHICULAR TRIPS				645	645

Reference: 1. Traffic Study for the Harrah's Narragansett Casino proposed expansion to 3800 gaming positions report prepared by Vanasse Hangen Brustling Inc.,
2. ITE TRIP GENERATION HANDBOOK

Note: Traffic demand in Friday PM peak hours was assigned to and various entrances into Harrah's Narragansett Casino based on existing traffic patterns

TRIP GENERATION FOR 3600 POSITIONS GAMING FACILITY USING HARRAH'S NARRAGANSETT CASINO RATES					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	CASINO *Traffic derived* *Person Trip Rates*	*3,600* *Gaming Positions*	*0.339*	50.0% 611	50.0% 611
PROJECT GENERATED VEHICULAR TRIPS				611	611

GAMING CASINO TRAFFIC

TRIP GENERATION SUGARHOUSE CASINO PEAK HOUR RATE OF VEHICULAR TRAFFIC FLOW PER GAMING POSITION					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	Gaming Positions - Casinos	*1,956*	*0.31*	49.4% 301	50.6% 308
PROJECT GENERATED VEHICULAR TRIPS				301	308

TRIP GENERATION FOR 3600 POSITIONS GAMING FACILITY USING SUGARHOUSE CASINO RATES					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	Gaming Positions - Casinos	*3,600*	*0.31*	49.4% 553	50.6% 567
PROJECT GENERATED VEHICULAR TRIPS				553	567

Reference: June 2012 count data as reported in Sugarhouse Casino Traffic Impact Report, prepared by Urban Engineering Inc. dated February 2

GAMING CASINO TRAFFIC

TRIP GENERATION EAST COAST CASINOS PEAK HOUR RATE OF VEHICULAR TRAFFIC FLOW PER GAMING POSITION					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	Gaming Positions - Casinos	*4,700*	*0.29*	62.9% 857	37.2% 506
PROJECT GENERATED VEHICULAR TRIPS				857	506

TRIP GENERATION FOR 3600 POSITIONS GAMING FACILITY USING AVERAGE EAST COAST CASINO RATES					
PROJECT COMPONENTS	*DESCRIPTION*	*PROPOSED SIZE*	*TRIP RATE*	BUILD TRAFFIC VOLUMES *Friday PM Peak*	
				IN	OUT
1	Gaming Positions - Casinos	*3,600*	*0.29*	62.9% 656	37.2% 388
PROJECT GENERATED VEHICULAR TRIPS				656	388

Reference: Data Reported in Plainridge Racecourse EOEA 11431, prepared by Tilton Associates dated December 2012
East Coast Casino included: Twin River Casino, Newport Grand and Casino at Ocean Downs.

APPENDIX H

Comparison of Trip Generation Methodologies for Friday PM Peak

COMPARISON OF TRIP GENERATION METHODOLOGIES FOR FRIDAY PM PEAK						
FACILITY NAME	SOURCE	GAMING POSITIONS	IN	OUT	TOTAL	PERCENTAGE DIFFERENCE GREENETRACK CASINO
Saratoga Gaming and Race	Traffic Evaluation conducted by Clough Harbour & Associates LLP	3600	765	765	1530.0	28.0%
Crossroad Gaming Resort and SPA	Grove Miller Engineering, Inc. Traffic Engineering Consultants Harrisburg PA	3600	450	313	763.2	64.1%
Aqueduct Racetrack Video Lottery Terminal	Phillip Habib & Associates, January 2004 Traffic Study - Prepared for New York Racing Association	3600	612	567	1179.6	44.5%
Las Vegas Hotel/CASINO	Curtis D. Rowe, Mohamed S. Kaseko and Kenneth W. Ackert, ITE Journal May 2002	3600	800	867	1666.8	21.5%
Local Hotel/CASINO Single Variable	Curtis D. Rowe, Mohamed S. Kaseko and Kenneth W. Ackert, ITE Journal May 2002	3600	1101	1016	2116.8	0.3%
St. Charles Peak Hour Vehicular Traffic Flow Per Gaming Position	Paul C. Box and William Bunte ITE Journal, March 1998	3600	684	864	1548.0	27.1%
St. Charles Queen Casino Vehicular Traffic	Paul C. Box and William Bunte ITE Journal, March 1998	3600	1044	1008	2052.4	3.4%
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Mountain Resort and Casino - Town of Thompson, NY	Creighton Manning Engineering, LLP Albany, NY - CME Project No. 00-058	3600	546	649	1195.2	43.7%
Harrah's Narragansett Casino	Vanasse Hangen Brustlin, Inc.	3600	611	611	1222.1	42.5%
Sugarhouse Casino	Urban Engineers, Inc.	3600	553	567	1119.6	47.3%
East Coast Casinos	Tilton Associates	3600	656	388	1044.0	50.8%

COMPARISON OF TRIP GENERATION METHODOLOGIES FOR FRIDAY PM PEAK						
FACILITY NAME	SOURCE	GAMING POSITIONS	IN	OUT	TOTAL	PERCENTAGE DIFFERENCE GREENETRACK CASINO
Saratoga Gaming and Race	Traffic Evaluation conducted by Clough Harbour & Associates LLP	3600	765	765	1530.0	28.0%
Crossroad Gaming Resort and SPA	Grove Miller Engineering, Inc. Traffic Engineering Consultants Harrisburg PA	3600	450	313	763.2	64.1%
Aqueduct Racetrack Video Lottery Terminal	Philip Habib & Associates, January 2004 Traffic Study - Prepared for New York Racing Association	3600	612	567	1179.6	44.5%
Las Vegas Hotel/CASINO	Curtis D. Rowe, Mohamed S. Kaseko and Kenneth W. Ackert, ITE Journal May 2002	3600	800	867	1666.8	21.5%
Local Hotel/CASINO Single Variable	Curtis D. Rowe, Mohamed S. Kaseko and Kenneth W. Ackert, ITE Journal May 2002	3600	1101	1016	2116.8	0.3%
St. Charles Peak Hour Vehicular Traffic Flow Per Gaming Position	Paul C. Box and William Bunte ITE Journal, March 1998	3600	684	864	1548.0	27.1%
St. Charles Queen Casino Vehicular Traffic	Paul C. Box and William Bunte ITE Journal, March 1998	3600	1044	1008	2052.4	3.4%
Mountain Resort and Casino - Town of Thompson, NY		3600	546	649	1195.2	43.7%
Harrah's Narragansett Casino	Vanasse Hangen Brustlin, Inc.	3600	611	611	1222.1	42.6%
Sugarhouse Casino	Urban Engineers, Inc.	3600	553	567	1119.6	47.3%
East Coast Casinos	Tilton Associates	3600	656	388	1044.0	50.8%
PERCENTAGE DIFFERENCE BETWEEN THE CONSERVATIVE RATE USED FOR CASINO STUDY VS. AVERAGE RATE FROM OTHER STUDIES						31.1%

GREENMAN-PEDERSEN, INC. TRAFFIC IMPACT ANALYSIS - GREENETRACK INC. CASINO DEVELOPMENT FRIDAY PM PEAK - BASED ON AVERAGE OF ABOVE NOTED STUDIES AS COMPARED TO MICHAEL TRUEBLOOD STUDY RATES						TRIP GENERATION REDUCTION IN FRIDAY PM PEAK HOUR
FACILITY NAME	SOURCE	GAMING POSITIONS	IN	OUT	TOTAL	
Greenetrack Inc Casino	BASED ON AVERAGE CASINO RATE OF ABOVE STUDIES	3600	769	696	1466	658
	(WHEN APPIED TO MICHAEL TRUEBLOOD STUDY RATES)					

APPENDIX I

Estimated Visitation by Gaming Market Segments with Trip Distribution Estimate

Newburgh Gaming Revenue by Zip Code and Market Segment, 2018								
Market Area/Zip Codes	21+ Population	AAHI	Newburgh Revenue	Avg. Win Per Visit	Visits	Market Segment Percentage	Town	Preferred Route (Seconday Route)
NY South								
12592	1,059	$59,158	$59,550	$65	916	0%	Wassaic	I-84
12446	4,100	$60,959	$399,962	$66	6,017	0%	Kerhonkson	747
12458	1,778	$61,588	$109,654	$67	1,637	0%	Napanoch	747
12601	32,969	$63,006	$5,478,817	$68	80,402	4%	Poughkeepsie	I-84
12515	1,099	$64,726	$241,518	$70	3,473	0%	Clintondale	747
12401	27,238	$66,465	$2,875,823	$71	40,523	2%	Kingston	I-87
10927	8,927	$67,373	$971,016	$72	13,541	1%	Haverstraw	207 (I-87)
12404	2,839	$68,469	$360,024	$73	4,959	0%	Accord	I-87
12548	965	$70,349	$244,171	$74	3,293	0%	Modena	747
12486	1,114	$70,395	$166,859	$74	2,249	0%	Tillson	I-87
12543	2,221	$70,683	$607,406	$74	8,163	0%	Maybrook	747
12522	4,084	$72,519	$340,747	$76	4,489	0%	Dover Plains	I-84
12472	1,367	$73,017	$203,532	$76	2,667	0%	Rosendale	I-87
12546	2,342	$73,334	$130,679	$77	1,706	0%	Millerton	I-84
10566	18,538	$75,367	$3,092,710	$78	39,529	2%	Peekskill	207 (I-84)
12550	39,676	$75,368	$13,147,425	$78	168,040	8%	Newburgh	207 (I-84)
10993	3,731	$75,450	$507,349	$78	6,479	0%	West Haverstraw	207 (I-87)
12466	2,195	$76,300	$280,654	$79	3,553	0%	Port Ewen	I-87
12508	16,214	$77,492	$4,751,550	$80	59,413	3%	Beacon	I-84
12721	4,545	$78,303	$466,379	$81	5,784	0%	Bloomingburg	747
12538	9,953	$79,010	$1,606,158	$81	19,777	1%	Hyde Park	I-84
12586	9,316	$79,151	$2,987,363	$81	36,732	2%	Walden	747
12567	2,216	$79,196	$155,654	$81	1,913	0%	Pine Plains	I-84
12542	4,337	$79,329	$1,280,893	$81	15,721	1%	Marlboro	I-84
10928	4,513	$79,653	$1,121,995	$82	13,726	1%	Highland Falss	207 (I-87)
10537	1,773	$80,026	$336,328	$82	4,099	0%	Lake Peekskill	207 (I-84)
12411	257	$80,562	$38,229	$82	463	0%	Bloomington	I-87
12528	10,621	$81,813	$2,430,104	$84	29,102	1%	Highland	I-87
12594	3,016	$82,963	$260,792	$84	3,088	0%	Wingdale	I-84
12547	2,000	$84,909	$564,401	$86	6,560	0%	Milton	I-84
10977	40,901	$84,945	$4,457,232	$86	51,791	2%	Spring Valley	I-87
12443	3,301	$86,131	$448,510	$87	5,153	0%	Hurley	I-87
12487	2,734	$86,196	$452,811	$87	5,200	0%	Ulster Park	I-87
12553	18,702	$86,279	$7,190,298	$87	82,503	4%	New Windsor	207
12440	1,475	$86,549	$289,531	$87	3,314	0%	High Falls	I-87
12589	13,357	$86,716	$4,296,611	$88	49,099	2%	Wallkill	747

10941	10,364	$86,991	$2,042,455	$88	23,280	1%	Middletown	747
12501	2,082	$87,109	$164,492	$88	1,873	0%	Amenia	I-84
12604	1,002	$87,120	$224,393	$88	2,555	0%	Poughkeepsie	I-84
12507	136	$87,475	$14,843	$88	168	0%	Barrytown	I-87
12503	697	$87,927	$45,614	$88	515	0%	Ancramdale	I-84
12549	7,522	$88,126	$2,277,578	$89	25,689	1%	Montgomery	747
12561	13,225	$88,953	$3,185,415	$89	35,657	2%	New Paltz	747
12566	8,206	$89,078	$1,504,844	$89	16,826	1%	Pine Bush	747
12419	559	$89,293	$98,103	$90	1,095	0%	Cottekill	I-87
10950	28,373	$89,379	$7,072,075	$90	78,856	4%	Monroe	747
12581	1,699	$89,818	$170,940	$90	1,898	0%	Sanfordville	I-84
10952	21,619	$90,498	$2,565,395	$91	28,316	1%	Monsey	I-87
12524	12,015	$90,602	$3,388,217	$91	37,364	2%	Fishkill	I-84
10975	215	$92,710	$46,966	$92	508	0%	Southfields	I-87
12590	27,153	$92,810	$7,411,348	$92	80,135	4%	Wappings Falls	I-84
12585	839	$93,010	$117,689	$93	1,270	0%	Verbank	I-84
12603	31,812	$93,659	$7,335,896	$93	78,729	4%	Poughkeepsie	I-84
12525	2,617	$95,179	$772,328	$94	8,180	0%	Gardiner	747
10992	7,519	$96,079	$2,898,877	$95	30,464	1%	Washingtonville	747
10925	3,794	$96,333	$570,160	$95	5,979	0%	Greenwood Lake	747
12545	3,645	$97,579	$461,269	$96	4,786	0%	Millbrook	I-84
12484	2,162	$98,750	$381,436	$97	3,919	0%	Stone Ridge	I-87
10931	748	$99,657	$105,469	$98	1,075	0%	Hillburn	I-87
10919	701	$100,468	$129,931	$99	1,316	0%	Circleville	747
10923	6,649	$100,486	$1,218,680	$99	12,340	1%	Garnerville	207 (I-87)
10588	1,662	$101,676	$337,089	$100	3,380	0%	Shrub Oak	I-84
10918	8,659	$101,964	$2,386,852	$100	23,877	1%	Chester	747
12563	6,798	$102,361	$820,712	$100	8,184	0%	Patterson	I-84
10535	416	$102,481	$79,603	$100	793	0%	Jefferson Valley	I-84
12578	1,623	$102,988	$271,062	$101	2,689	0%	Salt Port	I-84
12518	4,401	$103,304	$1,778,385	$101	17,598	1%	Cornwall	207
10921	3,130	$103,576	$568,774	$101	5,616	0%	Florida	747
12577	1,429	$103,791	$627,889	$101	6,189	0%	Salisbury Mills	207
10924	10,646	$104,051	$2,243,006	$102	22,062	1%	Goshen	747
12572	7,885	$104,177	$1,179,106	$102	11,586	1%	Rhinebeck	I-87
12569	7,532	$104,401	$1,486,227	$102	14,578	1%	Pleasant Valley	I-84
12531	2,715	$104,597	$436,324	$102	4,273	0%	Holmes	I-84
12520	2,443	$104,712	$1,033,984	$102	10,117	0%	Cornwall-on-Hudson	207
10926	2,599	$105,712	$797,624	$103	7,742	0%	Harriman	207 (I-87)
10970	8,802	$106,016	$1,775,041	$103	17,188	1%	Pomona	207 (I-87)
10958	2,252	$107,767	$345,658	$105	3,301	0%	New Hampton	I-84

12564	5,500	$108,323	$713,328	$105	6,783	0%	Pawling	I-84
12514	2,248	$108,506	$331,081	$105	3,144	0%	Clinton Corners	I-84
12570	5,076	$108,588	$830,205	$105	7,879	0%	Poughquag	I-84
10974	2,505	$108,720	$448,848	$105	4,255	0%	Sloatsburg	I-87
10547	5,951	$108,897	$1,299,308	$106	12,301	1%	Mohegan Lake	207 (I-84)
10562	25,577	$109,461	$3,481,858	$106	32,821	2%	Ossining	207 (I-84)
10960	12,529	$109,874	$1,073,323	$106	10,085	0%	Nyack	I-87
10989	7,682	$110,556	$907,087	$107	8,479	0%	Valley Cottage	I-87
10954	18,792	$110,669	$2,283,462	$107	21,326	1%	Nanuet	I-87
10976	1,159	$111,394	$49,596	$108	461	0%	Sparkill	I-87
10980	10,703	$111,593	$2,675,846	$108	24,816	1%	Stony Point	207 (I-87)
10917	1,377	$112,169	$498,076	$108	4,599	0%	Central Valley	I-87
12580	3,490	$112,712	$673,455	$109	6,193	0%	Staatsburg	I-84
10516	4,182	$112,743	$1,489,709	$109	13,696	1%	Cold Spring	I-84
10983	4,542	$113,771	$269,046	$110	2,455	0%	Tappan	I-87
12575	1,603	$113,991	$801,552	$110	7,301	0%	Rock Tavern	747
10548	3,783	$114,107	$857,787	$110	7,807	0%	Montrose	207 (I-84)
10990	15,844	$114,338	$2,789,581	$110	25,344	1%	Warwick	747
10985	42	$115,028	$9,607	$111	87	0%	Thompson Ridge	747
10920	6,983	$115,288	$1,033,865	$111	9,327	0%	Congers	I-87
12582	5,546	$115,423	$1,183,992	$111	10,671	0%	Stormville	I-84
10901	18,831	$116,526	$3,178,435	$112	28,415	1%	Suffern	I-87
10512	18,757	$117,679	$3,713,926	$113	32,925	2%	Carmel	I-84
10579	6,781	$118,248	$1,869,475	$113	16,506	1%	Putnam Valley	I-84
10511	2,106	$120,050	$548,948	$115	4,785	0%	Buchanan	207 (I-84)
12533	18,209	$121,106	$4,991,901	$116	43,184	2%	Hopewell Junction	I-84
12540	5,585	$121,520	$1,173,568	$116	10,123	0%	Lagrangeville	I-84
10509	15,144	$121,710	$2,118,257	$116	18,247	1%	Brewster	I-84
10916	3,361	$122,294	$1,367,129	$117	11,728	1%	Campbell Hall	747
10964	1,191	$122,837	$51,701	$117	442	0%	Palisades	I-87
10965	11,602	$123,864	$1,256,134	$118	10,659	0%	Pearl River	I-87
10589	5,826	$124,446	$986,900	$118	8,341	0%	Somers	I-84
10541	21,181	$125,478	$4,638,665	$119	38,925	2%	Mahopac	I-84
10520	10,141	$125,912	$1,971,070	$120	16,491	1%	Croton-on-Hudson	207 (I-84)
10986	1,619	$127,530	$508,620	$121	4,209	0%	Tomkins Cove	207 (I-84)
10984	2,040	$129,337	$506,937	$122	4,144	0%	Thiells	207 (I-87)
10930	6,508	$130,750	$3,099,838	$123	25,105	1%	Highland Mills	747
10962	5,350	$130,789	$462,740	$124	3,747	0%	Orangeburg	I-87
10524	3,467	$131,012	$1,293,420	$124	10,457	0%	Garrison	I-84
10598	21,764	$131,111	$4,610,534	$124	37,251	2%	Yorktown Heights	207 (I-84)
10567	15,356	$131,501	$4,294,164	$124	34,606	2%	Cortlandt	207 (I-84)

10968	2,099	$133,885	$141,465	$126	1,122	0%	Piermont	I-87
10996	4,016	$134,190	$1,825,640	$126	14,457	1%	West Point	207
10913	4,094	$134,524	$422,951	$127	3,342	0%	Blauvelt	I-87
10987	2,755	$134,794	$661,521	$127	5,218	0%	Tuxedo Park	I-87
10507	4,514	$137,476	$662,970	$129	5,141	0%	Bedford Hills	I-84
10994	5,545	$140,893	$776,886	$132	5,896	0%	West Nyack,	I-87
10956	24,667	$144,102	$5,116,659	$134	38,076	2%	New City	207 (I-87)
10549	12,730	$153,361	$2,036,410	$142	14,347	1%	Mt. Kisco	I-84
10505	502	$171,397	$138,624	$157	885	0%	Baldwin Place	I-84
10578	630	$172,470	$138,967	$158	882	0%	Purdys	I-84
10527	771	$193,909	$242,677	$175	1,386	0%	Granite Springs	I-84
10590	5,090	$195,814	$816,485	$177	4,623	0%	South Salem	I-84
10546	850	$208,862	$211,901	$187	1,132	0%	Millwood	207 (I-84)
10501	1,061	$216,185	$344,394	$193	1,782	0%	Amawalk	I-84
10536	8,487	$221,807	$2,239,044	$198	11,317	1%	Katonah	I-84
10560	3,998	$224,335	$968,592	$200	4,845	0%	North Salem	I-84
10526	1,322	$225,403	$342,490	$201	1,706	0%	Goldens Bridge	I-84
10597	724	$240,346	$173,801	$213	816	0%	Waccabuc	I-84
10518	969	$252,944	$236,982	$223	1,061	0%	Cross River	I-84
10514	8,513	$296,373	$2,606,679	$259	10,074	0%	Chappaqua	207 (I-84)
10506	4,386	$323,740	$1,234,490	$281	4,392	0%	Bedford	I-84
10576	3,929	$346,877	$1,113,309	$300	3,711	0%	Pound Ridge	I-84
Market Segments								
NYSouth	1,015,403	$15,939,950	209,496,279	$49	2,143,370	46%		
NYSW	107,925	$68,085	5,619,809	$77	72,985	2%		
CentralNYSouth	180,109	$70,812	4,545,298	$81	56,115	1%		
NYMA	163,958	$74,193	3,949,847	$81	48,764	1%		
Western CT	1,189,345	$107,019	61,115,737	$120	509,298	11%		
Yonkers	1,676,175	$85,079	15,914,243	$105	151,564	3%		
Manhattan	1,340,667	$131,753	10,297,329	$200	51,487	1%		
Long Island	4,854,558	$82,908	11,503,544	$150	76,690	2%		
New Jersey	3,573,617	$102,012	164,839,546	$120	1,373,663	29%		
Penn/NY	980,011	$63,155	5,284,990	$75	70,467	2%		
Central NY	463,455	$65,292	1,622,036	$76	21,343	0%		
Albany	663,064	$73,936	3,415,917	$85	40,187	1%		
Tertiary North	255,165	$59,986	706,234	$74	9,544	0%		
Tertiary NE	211,107	$74,948	1,296,846	$86	15,080	0%		
Tertiary East	214,665	$68,617	1,719,829	$83	20,721	0%		
Syracuse	216,826	$57,362	588,974	$90	6,544	0%		
North I 90	197,316	$65,652	664,658	$95	6,996	0%		
South I 90	305,210	$71,458	936,527	$100	9,365	0%		

NYWest	352,862	$61,479	886,979	$100	8,870	0%
TOTAL	**17,961,438**	**$17,323,696**	**$504,404,623**	**$107**	**4,693,051**	

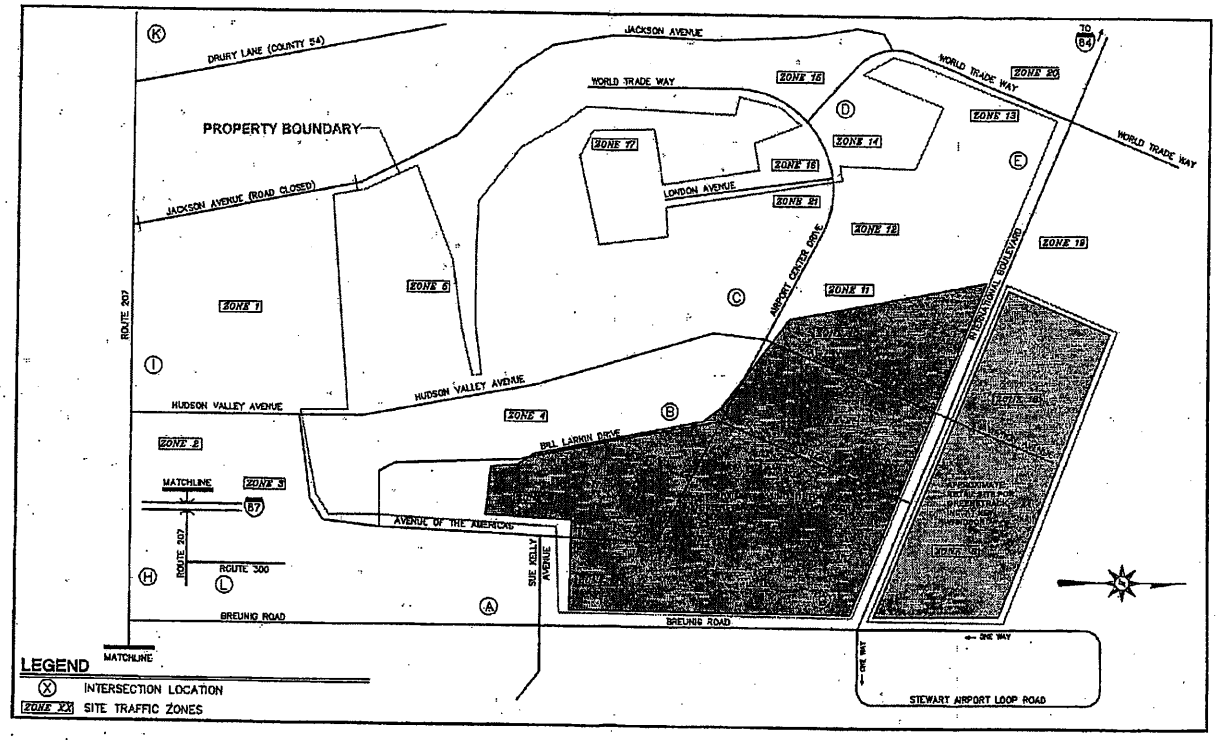
Source: GMA

Expected Route	RT207	RT207 (I-84)	RT207 (I-87)	RT747	I-84	I-87	Total
Number of Market Area/Zip Codes	5	13	9	25	54	34	140
Market Segment (Visits) Percentage	6%	17%	6%	22%	34%	15%	100%

Trip Distribution for Patrons within "NYSouth" zone

APPENDIX J

New York International Plaza Development Zones Map


DRURY LANE (COUNTY 54)
JACKSON AVENUE
WORLD TRADE WAY
PROPERTY BOUNDARY
JACKSON AVENUE (ROAD CLOSED)
LONDON AVENUE
AIRPORT CENTRE DRIVE
INTERNATIONAL BOULEVARD
ROUTE 207
HUDSON VALLEY AVENUE
BILL LARKIN DRIVE
MATCHLINE
ROUTE 300
AVENUE OF THE AMERICAS
SIE KELLY AVENUE
BREUNIG ROAD
STEWART AIRPORT LOOP ROAD
ONE WAY
TO 84
ZONE 1
ZONE 2
ZONE 3
ZONE 4
ZONE 5
ZONE 6
ZONE 7
ZONE 8
ZONE 9
ZONE 10
ZONE 11
ZONE 12
ZONE 13
ZONE 14
ZONE 15
ZONE 16
ZONE 17
ZONE 18
ZONE 19
ZONE 20
ZONE 21
LEGEND
INTERSECTION LOCATION
ZONE XX SITE TRAFFIC ZONES

APPENDIX K

Traffic Volume Comparison of NYIP and Greenetrack, Inc. developments under Build Condition

Build Volumes: NYIP vs. Greenetrack, Inc.

At Intersection of Route 207 and Route 300

	CASINO/RETAIL IN		CASINO/RETAIL OUT	
	Southbound	Westbound	Eastbound	
	Right Turn	Through	Left Turn	Through
2015 Background Volume*	655	515	415	420
2015 NYIP Full Build Volume*	712	561	553	529
NYIP-Generated Trip Ratio	55%	45%	56%	44%
Casino-Generated Trip (15% of Trip Generation)**	203		190	
Casino-Generated Trip by Approach	112	91	106	84
2015 Casino Full Build Forecast	767	606	521	504

*Volumes obtained from the New York International Plaza Traffic Impact Study (2002)

**Trip generated by Greenetrack, Inc. at New Windsor, which includes casino and shopping center components. See Table 1 in Report.