A G E N D A
JAMES CITY COUNTY PLANNING COMMISSION
REGULAR MEETING
County Government Center Board Room
101 Mounts Bay Road, Williamsburg, VA 23185
November 2, 2016
7:00 PM

A. CALL TO ORDER

B. ROLL CALL

C. PUBLIC COMMENT

D. CONSENT AGENDA

1. Minutes Adoption - October 5, 2016 Regular Meeting
2. Development Review Committee Action Item: Case No. C-0031-2106, Noland Blvd. AutoZone

E. REPORTS OF THE COMMISSION

F. PUBLIC HEARINGS

1. SUP-0014-2016/MP-0002-2016. Warhill Sports Complex Master Plan Amendment
2. SUP-0015-2016. Lafayette High School Auxiliary Gym
3. ZO-0013-2016. Zoning Ordinance Amendments to Permit Mobile Food Vending Vehicles (Food Trucks) in the B-1, General Business District

G. PLANNING COMMISSION CONSIDERATIONS

1. ZO-0014-2016, Initiation of Consideration of Amendments to the Sign Ordinance

H. PLANNING DIRECTOR'S REPORT

1. Planning Director's Report - November 2016

I. PLANNING COMMISSION DISCUSSION AND REQUESTS

J. ADJOURNMENT

AGENDA ITEM NO. D.1.

ITEM SUMMARY

DATE: 11/2/2016

TO: The Planning Commission

FROM: Paul D. Holt, III, Secretary

SUBJECT: Minutes Adoption - October 5, 2016 Regular Meeting

ATTACHMENTS:

	Description	Type
	Minutes of the October 5, 2016 Regular Meeting	Minutes

REVIEWERS:

Department	Reviewer	Action	Date
Planning Commission	Holt, Paul	Approved	10/26/2016 - 4:26 PM
Planning Commission	Holt, Paul	Approved	10/26/2016 - 4:26 PM
Publication Management	Burcham, Nan	Approved	10/26/2016 - 4:29 PM
Planning Commission	Holt, Paul	Approved	10/26/2016 - 4:29 PM

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JAMES CITY COUNTY PLANNING COMMISSION REGULAR MEETING
County Government Center Board Room 101 Mounts Bay Road, Williamsburg, VA 23185
October 5, 2016
7:00 PM

A. CALL TO ORDER

Mr. Tim O'Connor called the meeting to order at 7:00 p.m.

B. ROLL CALL

Planning Commissioners

Present:
Tim O'Connor
Rich Krapf
Chris Basic
Robin Bledsoe
John Wright
Heath Richardson
Danny Schmidt

Staff Present:
Paul Holt, Planning Director
Ellen Cook, Principal Planner
Tammy Rosario, Principal Planner
Scott Whyte, Senior Landscape Planner II
Savannah Pietrowski, Planner
Roberta Sulouff, Planner
Alex Baruch, Planner
Lauren White, Planner
Maxwell Hlavin, County Attorney

C. PUBLIC COMMENT

Mr. O'Connor opened Public Comment.

As no one wished to speak, Mr. O'Connor closed Public Comment.

D. CONSENT AGENDA

1. Minutes Adoption - September 7, 2016 Regular Meeting

2. Development Review Committee Action Item: Case No. SP-0047-2016, Patriot's Colony Expansion (Recommendation: Approval, with Mr. Basic abstaining.)

Ms. Robin Bledsoe made a motion to approve the Consent Agenda.

The consent agenda was approved by voice vote with Mr. Basic abstaining on the Development Review Committee Action Item (7-0).

E. REPORTS OF THE COMMISSION

Mr. Rich Krapf stated that Mr. Wright chaired the last Policy Committee meeting and would defer to him for the report.

Mr. John Wright stated that the Policy Committee met on September 15 to review updates to the proposed ordinance amendments for Food Trucks and Wireless Communications Facilities and proposed updates to the Sign Ordinance.

Mr. Wright stated that the Committee reviewed revised language for amendments to allow food trucks in the M-1, Limited Business/Industrial District, M-2, General Industrial District, PUD-C, Planned Unit Development-Commercial and PL, Public Land Districts that incorporated changes based on requests from the Committee at its August 11 meeting and feedback from the public comment at the August 25 meeting. The Committee requested several additional changes as did the County Attorney's Office. The Committee voted to forward the ordinance amendments to the Planning Commission for consideration.

Mr. Wright stated that the Committee also considered revised language for amendments to the Wireless Communications Facilities Ordinance. Mr. Wright stated that the changes focused on six exemptions. Mr. Wright stated that the Committee voted to forward the ordinance amendments to the Planning Commission for consideration.

Mr. Wright stated that the Committee discussed potential amendments to the Sign Ordinance. Mr. Wright stated that staff will return to the next Policy Committee meeting with amendments to make the Sign Ordinance content neutral in accordance with the Supreme Court decision on sign content relating to freedom of speech.

F. PUBLIC HEARINGS

1. SUP-0014-2016/MP-0002-2016, Warhill Sports Complex Master Plan Amendment

Mr. Paul Holt, Planning Director, stated that Mr. John Carnifax, Director of Parks & Recreation, has applied to amend the existing special Use Permit and Master Plan for the Warhill Sports Complex to allow for the conceptual possible addition of a running center building, a Williamsburg Area Transit Authority transfer station, the relocation of a proposed indoor sports facility and other minor revisions. Mr. Holt stated that the public hearing has been advertised and will need to be opened; however, staff recommends that the Planning Commission defer consideration of this application to its November 2, 2016 meeting. Mr. Holt stated that the deferral will allow staff and VDOT additional time with which to evaluate traffic impacts

Mr. O'Connor inquired if any of the Commissioners were opposed to the deferral.

No Commissioners voiced an objection.

Mr. O'Connor opened the public hearing.

Mr. Jack Fowler, 109 Wilderness Lane, addressed the Commission on concerns about the design for the boat launch at Little Creek Reservoir. Mr. Fowler requested that the County address the concerns at Little Creek Reservoir before spending funds to improve other facilities.

Ms. Tamara Johnson, a resident of the Mallard Hill subdivision, addressed the Commission on concerns about the vehicle speed on Warhill Trail. Ms. Johnson requested that the traffic considerations include the speed as well as the level of service at the intersection. Ms. Johnson stated that the residents would like an additional access point considered to alleviate the congestion.

Mr. Richard Minor, president of the Longhill Gate Home Owner's Association, addressed the Commission on concerns about the volume of traffic accessing the Warhill Sports Complex. Mr. Minor stated that a traffic signal would be beneficial, as would an additional access point. Mr. Minor further stated that the existing turn lanes on Longhill Road should be evaluated for safety.

As no one further wished to speak, Mr. O'Connor continued the public hearing to the November 2, 2016 Planning Commission meeting.

2. Z-0009-2016, 124 and 130 Riverview Plantation Drive

Mr. Alex Baruch, Planner, provided a report to the Commission on the request to rezone approximately 5.45 acres of land from R-1, Limited Residential to A-1, General Agricultural. The purpose of this application is to allow the keeping of two horses and their foals to weaning age on their property for personal use. Mr. Baruch stated that the subject properties are located in the middle of Riverview Plantation subdivision and do not share any boundary lines with adjacent lots as they are surrounded by two roads, Four Mile Tree and Riverview Plantation Drive. Mr. Baruch further stated that the house and its dependencies are a part of the National Register of Historic Places. Mr. Baruch stated that the property is designated Rural Lands on the adopted Comprehensive Plan Land Use Map as are all of the surrounding parcels. Staff finds this use to fit within the recommended uses listed in the Comprehensive Plan, and to meet Rural Lands development standards. Mr. Baruch noted that after the distribution of the agenda materials, the applicants became aware of concerns related to the barn. Mr. Baruch stated that the applicants are proposing to move the location of the barn interior to the parcel, across from the existing garage.

Mr. Baruch stated that staff finds the proposal to be compatible with the adopted Comprehensive Plan, the Zoning Ordinance and surrounding development. Mr. Baruch further stated that staff recommends that the Planning Commission recommend approval of this application to the Board of Supervisors and accept the proffers attached to the staff report.

Mr. O'Connor opened the floor for questions from the Commission.

Mr. Danny Schmidt inquired what additional types of structures could be built if the property is rezoned.

Mr. Baruch stated that accessory structures are permitted uses in the A-1 district. Mr. Baruch stated that the residential components were not proffered out; however, all the other agricultural uses and all commercial uses have been proffered out.

Mr. Wright inquired what other animals could be housed on the property.

Mr. Baruch stated that all other agricultural uses have been proffered out. Mr. Baruch further stated that the request is specifically for two horses and their foal to weaning age.

Mr. Chris Basic inquired if there were a mechanism to ensure that the nutrient management plan is carried out.

Mr. Baruch stated that the plan is a recommendation approved by the Colonial Soil and Water Conservation District and the County's Engineering & Resource Protection division but it is not a binding document.

Mr. O'Connor inquired if the restriction was for two animals whether it be horses or ponies.

Mr. Baruch state that the request was for two horses and their foals to weaning age.

Mr. Basic inquired about the standard weaning age for a foal.

Mr. Baruch stated that his research indicated that weaning age was between six months and one year.

Ms. Bledsoe inquired about the inclusion of the foals when both of the applicant's horses are geldings and it was stated that there would be no reproductive activities on the property.

Mr. Baruch stated that the language was a suggestion from the HOA. Mr. Baruch confirmed that both of the applicant's horses are geldings.

Ms. Bledsoe inquired if the allowance for foals was intended to leave the door open for something in the future.

Mr. Baruch stated that he would defer to the applicant on that question.

Mr. Krapf stated that his understanding is that the allowance for foals would cover a future situation where the applicant might have a mare, already with foal when purchased, instead of a gelding.

Mr. Baruch stated that Mr. Krapf's understanding is correct.

Mr. Schmidt inquired if the proffered conditions would apply to future property owners.

Mr. Baruch stated that the proffered conditions will run with the land and the limitation on the number of horses would not change.

Mr. Basic inquired if chickens were permitted in the R-1 Zoning District.

Mr. Baruch stated that chickens are permitted with the minimum lot size specified in the Chicken Keeping Ordinance.

Mr. O'Connor opened the public hearing.

Dr. Teresa Dewitt, 124 Riverview Plantation Drive, applicant, provided a presentation to the Commission on the request to rezone the property. Dr. Dewitt provided a history of the property, noting its agricultural origins and that the original Riverview Subdivision plan included a riding

stable among the recreational amenities. Dr. Dewitt discussed the conservation easement on 130 Riverview Plantation Road and noted that the conditions proffered with this rezoning would formalize the status of the easement. Dr. Dewitt shared details of the proposed barn and noted that the barn would be kept architecturally consistent with the existing buildings. Dr. Dewitt noted that waste and soiled bedding would be bagged and removed from the property twice weekly to minimize odor and proliferation of vermin. Dr. Dewitt further stated that the barn would not require extensive clearing or grading and that the paddocks would be rotated and managed to allow recovery of the grass.

Dr. Chris Dewitt, 124 Riverview Plantation Road, stated that he wanted to emphasize that the only structures would be on the 124 Riverview Road parcel. Dr. Dewitt further stated that the location of the proposed barn had adjusted to mitigate concerns.

Ms. Bledsoe inquired about the easement and the County's authority to regulate the easement.

Dr. Chris Dewitt stated that the lot known as 130 Riverview Plantation Road is shown on the plat as being in a conservation easement; however, it is not dedicated to the County. Dr. Dewitt stated that it is their intention to ensure that the parcel remains greenspace.

Ms. Bledsoe inquired about the James City Service Authority's requirements for the property.

Dr. Teresa Dewitt stated that the comments from the JCSA noted that the property owner would need to be responsible for developing water conservation standards.

Dr. Chris Dewitt stated that the JCSA comments preceded the recommendation from the Colonial Soil and Water Conservation District.

Ms. Bledsoe inquired about the design of the paddock area.

Dr. Chris Dewitt stated that it is proffered to ensure that any buildings or fences constructed would be architecturally consistent with the existing home.

Mr. Schmidt inquired whether the proposed barn would be post-in-ground or require a foundation.

Dr. Chris Dewitt stated that he anticipated it would require a slab foundation.

Mr. Basic inquired how the County could ensure that the nutrient management plan will be followed if it has not been proffered.

Dr. Chris Dewitt stated that they also want the area to be well maintained. Dr. Dewitt further stated that even before this application was considered, he obtained recommendations from the Turf Love program to improve the yard. Dr. Dewitt noted that he is following through with those recommendations.

Mr. O'Connor inquired if the applicant would consider adding the waste management plan to the proffers.

The applicants concurred with the request.

Ms. Morgan Dewitt, 124 Riverview Plantation Drive, addressed the Commission in support of the application by sharing the request she submitted to the Home Owners Association. Ms. Dewitt noted that the property and the horses would be well maintained and would be an asset to the community.

Mr. Kenneth Barnhart, 220 Sherwood Forrest, representing the Riverview Plantation Home Owners Association, addressed the Commission in opposition of the request to rezone the properties. Mr. Barnhart noted that the HOA has no question about the applicants' maintenance of their property or their ability to care for the horses. Mr. Barnhart stated that the HOA does not agree with the analysis that the use is compatible with the location and the surrounding development. Mr. Barnhart noted there has been a substantial outpouring of concerns from the community about impact on the surrounding properties and the precedent that the rezoning would set. Mr. Barnhart stated that the HOA Board requests that the Commission recommend denial of the rezoning application.

Ms. Jane Nichols, 102 Four Mile Tree, addressed the Commission in opposition to the rezoning. Ms. Nichols presented a petition signed by 44 home owners. Ms. Nichols expressed concerns about the appropriateness of the use in the community, the impacts on individuals allergic to horses, impacts on air quality. Ms. Nichols requested that the Commission recommend denial of the rezoning request.

Mr. Jim Saunders, 136 Riverview Plantation Drive, addressed the Commission in opposition to the rezoning. Mr. Saunders expressed concerns about the impacts of run-off and odors from the property.

Ms. Anita Dasher, 92 Four Mile Tree, addressed the Commission in opposition to the rezoning. Ms. Dasher expressed concerns about impacts on the beauty of the area and the air quality. Ms. Dasher requested that the Commission recommend denial of the rezoning request.

Mr. Louis Vosteen, 124 Four Mile Tree, addressed the Commission in opposition to the rezoning. Mr. Vosteen expressed concerns about potential for incompatible uses adjacent to the residential community and the impact of the rezoning on the values of the surrounding parcels. Mr. Vosteen requested that the Commission recommend denial of the rezoning request.

Mr. William Jaissle, 126 Four Mile Tree, addressed the Commission in opposition to the rezoning. Mr. Jaissle expressed concerns about run-off from the property, the proliferation of flies and other pests. Mr. Jaissle further expressed concerns about severe horse allergies. Mr. Jaissle requested that the Commission recommend denial of the rezoning request.

Mr. Edward Miller, 112 Four Mile Tree, addressed the Commission in opposition to the rezoning. Mr. Miller noted that it was the intent of the developer that the community be bound by covenants and restrictions and that any lots added to the community would also be bound by the covenants. Mr. Miller expressed concerns about the impact of the rezoning on the character of the neighborhood given that the parcels are central to the community. Mr. Miller requested that the Commission recommend denial of the rezoning request.

Mr. Peter Evans, 109 Greenway Circle addressed the Commission in opposition the rezoning. Mr. Evans expressed concerns about the precedent that the rezoning would set and the impact of potential property owners who are not as diligent as the applicant.

Mr. Obediah Andrews, 108 Greenway Circle, stated that, had he been at the HOA meeting he would have added his name to the petition. Mr. Andrews addressed the Commission in opposition the rezoning. Mr. Andrews expressed concerns about the precedent that the rezoning would set, future changes to the property and the impact on the historic integrity of the property. Mr. Andrews requested that the Commission recommend denial of the rezoning request.

Mr. John McDonough 712 E. Tazewell's Way, stated that he owns 119 and 120 Riverview Plantation Road. Mr. McDonough addressed the Commission in opposition to the rezoning. Mr. McDonough expressed concerns about the effect of creating an agricultural parcel in the center of a residential community. Mr. McDonough requested that the Commission recommend denial of the rezoning request.

Ms. Angie McDonough, 712 E. Tazewell's Way, addressed the Commission in opposition to the rezoning. Ms. McDonough expressed concerns about the potential for other property owners to request a similar rezoning. Ms. McDonough noted that she bought property in a residential Community and did not want to be adjacent to agricultural activities. Ms. McDonough requested that the Commission recommend denial of the rezoning request.

Mr. James Armstrong, 104 Riverview Plantation Drive, expressed appreciation for the way the applicants have improved the property. Mr. Armstrong further stated that the difficulty is to decide between the rights of a property owner and the common good. Mr. Armstrong requested that the Commission recommend denial of the rezoning request.

Mr. Dennis Dasher, 92 Four Mile Tree, addressed the Commission in opposition to the rezoning. Mr. Dasher expressed concerns about changes to the scenic property and the impacts of an agricultural property in the center of a residential community. Mr. Dasher stated that Riverview Plantation should remain a residential community.

As no one further wished to speak, Mr. O'Connor closed the public hearing

Mr. O'Connor opened the floor to discussion by the Commission

Mr. Krapf inquired about the factors staff considered in developing the recommendation on the application. Mr. Krapf noted that the Comprehensive Plan is a major factor but compatibility with surrounding development is also important.

Mr. Baruch stated that the subject parcel and the surrounding properties are designated rural lands. Mr. Baruch stated that equine opportunities are among the recommended uses in rural lands. Mr. Baruch further stated that staff considered the size of the parcels, the recommendations of the Colonial Soil & Water Conservation District Board and recommendations from other reviewing divisions and agencies.

Mr. Holt stated that the proffers were also a key factor. Mr. Holt stated that the proffers were designed to ensure mitigation of any negative impacts. Mr. Holt stated that the proffers remove the opportunity for all other agricultural uses, removes the potential for any commercial uses and limits the number of horses allowed on the property.

Ms. Bledsoe inquired about the process to amend proffers.

Mr. Holt stated that action by the Board of Supervisors would be required to amend proffers.

Ms. Bledsoe inquired if a future property owner could change the proffers.

Mr. Holt stated that it would be possible but the request would go through the Board of Supervisors legislative process.

Mr. O'Connor inquired if the subject parcels were encumbered by the Riverview Plantation Covenants and Restrictions.

Mr. Barnhart stated that he had researched the deeds for the property from the time it was deeded to the Plantation Club, Ltd. up to the time it was purchased by the applicant. Mr. Barnhart stated that he did not see covenants on the deed. Mr. Barnhart stated that all other properties in the subdivision have covenants on their deed. Mr. Barnhart noted that initially the plantation house was to serve as the clubhouse for the community and since it was not intended as a residential property, covenants were not included. Mr. Barnhart noted that the properties are part of Section III of Riverview Plantation and there are covenants for Section III. Mr. Barnhart stated that it is not clear if the Section III covenants apply to the subject properties; however, it is clear that the intent is for Riverview Plantation to be a residential community.

Ms. Bledsoe inquired if the applicant met with the neighbors prior to discuss their intentions.

Mr. Barnhart responded that the HOA Board had recommended that the applicant meet with neighbors prior to moving forward with the rezoning. Mr. Barnhart noted that some of the misunderstandings could have been avoided if the applicant had met with neighbors.

Ms. Bledsoe inquired if the HOA had discussed the proffers with the applicant.

Mr. Barnhart stated that the HOA had made recommendations on what the proffers should contain.

Ms. Bledsoe inquired if there was a community meeting.

Mr. Barnhart stated that the community meeting did not occur until after the public hearing notification sign was placed.

Ms. Bledsoe inquired if the applicants attended.

Mr. Barnhart stated that the applicants were notified. Mr. Barnhart stated that he also informed the applicants of the concerns from the community.

Mr. O'Connor requested that Mr. Hlavin discuss the Commissions role in considering the neighborhood covenants.

Mr. Max Hlavin, Assistant County Attorney, stated that restrictive covenants are private matters between private landowners and do not involve the County. Mr. Hlavin further stated that as they relate to the Commissions deliberations on land use, restrictive covenants indicate the desires and expectations of the landowners for the community. Mr. Hlavin stated that the scenic easement is shown on the plat of the property and that any changes to that easement would have to go through the Board of Supervisors plat vacation process. Mr. Hlavin noted that the scenic easement issue is separate from the issue of restrictive covenants.

Ms. Bledsoe asked the applicants if and when they shared their plan with the community.

Dr. Teresa Dewitt stated that they had created an information packet for neighbors and had set the packets out once the public hearing notification sign was posted.

Mr. Wright inquired if the applicants are members of the HOA and if they were given a declaration package.

Dr. Chris Dewitt stated that they are members of the HOA and received the declaration package.

Dr. Teresa Dewitt noted that it was suggested that they not attend the community meeting.

Mr. Baruch stated that he did not attend. Mr. Baruch stated that after the staff report is made available to the public, the County believes the report should speak for itself.

Ms. Bledsoe inquired who told the applicant that they should not attend the community meeting.

Dr. Chris Dewitt stated that Mr. Barnhart had recommended that they not attend. Dr. Dewitt further stated that Mr. Barnhart indicated that he was familiar with their proposal and would be able to make clarifications and address any questions.

Mr. Heath Richardson inquired if the HOA is active and actively enforcing covenants.

Mr. Baruch stated that believes it is a voluntary HOA and would defer to Mr. Barnhart on whether they HOA actively enforces covenants.

Mr. Barnhart stated that the HOA has been active from the beginning of the development and that they do enforce the covenants; however, the difficulty is that covenants vary somewhat depending on when the parcel was developed. Mr. Barnhart noted that nothing in the covenants requires membership in the HOA and that rather than being voluntary, it is more that requiring membership is unenforceable.

Mr. Richardson inquired whether the home is actually subject to the covenants.

Mr. Barnhart stated that the deeds for the two subject parcels do not have the covenants on them. Mr. Barnhart stated that the deeds for all the other parcels do have the covenants. Mr. Barnhart noted that the properties are part of Section III of Riverview Plantation and there are covenants for Section III. Mr. Barnhart stated that it is not clear if the Section III covenants apply to the subject properties; however, it is clear that the intent is for Riverview Plantation to be a residential community.

Mr. Krapf stated that this is a difficult application to sort through. Mr. Krapf stated that the Comprehensive Plan does support the rezoning. Mr. Krapf stated that the applicants have proffered away every other agricultural and commercial use that would be available under the A-1 zoning. Mr. Krapf noted that there is a primary structure and several accessory structures already on the parcel and that the 576 square foot barn would be of minimal impact. Mr. Krapf stated that the difficult part of the decision is that it would be the only property in that subdivision with the A-1 designation. Mr. Krapf stated that the elements he is weighing are the impact on the neighbors which is offset by the size of the parcel and the proffers.

Mr. Richardson stated that he believes the parcel is large enough to support the use with minimal impact and that the proffers also work to substantially mitigate the impacts. Mr. Richardson noted that he would like to see the waste management plan included in the proffers.

Mr. Basic stated that he concurs that this is not a cut and dried decision. Mr. Basic noted that one of the larger questions is what is to prevent other property owners to request their property be rezoned to A-1. Mr. Basic stated that the factual response is that the ordinance requires that a parcel be minimum of three acres which would address that concern. Mr. Basic stated that he would consider supporting the request because the fear of what this application could be versus what it actually is are very different.

Mr. Wright stated that both the applicants and the neighbors have strong arguments in favor of their individual positions. Mr. Wright stated that for him, it comes down to the land use. Mr. Wright stated that he is basing his decision on the best use for the land.

Mr. Richardson stated that it is worth considering also that the parcel boundary line would be extinguished and the property would remain that larger acreage.

Mr. Schmidt stated that rezoning the parcel would create an island in the middle of the residentially zoned parcels. Mr. Schmidt stated that after considering all the factors he is inclined not to support the application.

Mr. Wright noted that if the request were in reverse to go to a designation that supports greater density, the Comprehensive Plan would support keeping the area rural lands and ensuring that it remains a scenic area in the future.

Mr. O'Connor stated that the residents have an expectation for how the community will operate based on the zoning designation when they purchased property. Mr. O'Connor stated that his consideration is balancing the expectations of the community with the desires of the applicant.

Ms. Bledsoe stated that she believes the placement of the property is key to the decision. Ms. Bledsoe stated that it has been the centerpiece of the community from the beginning. Ms. Bledsoe further stated that the applicant's request is compatible with the Comprehensive Plan. Ms. Bledsoe stated that it does come down to weighing what the community expects against the right of the homeowner. Ms. Bledsoe stated that the next consideration is the visual impact on the property. Ms. Bledsoe stated that there does not seem to be opposition to constructing the barn, but more to the horses and their by-products. Ms. Bledsoe stated that what changes the look of the property is establishing the fencing for the paddocks. Ms. Bledsoe stated that the difficult decision for the Commission is whether it is more important that the community as a whole gets to maintain what it is accustomed to at the expense of the homeowner or does the homeowner get what it wants at the expense of the community.

Mr. Richardson made a motion to approve with an addition to the proffers for the waste management plan.

Mr. Holt stated that proffers were entirely voluntary.

Mr. Richardson made a motion to approve.

On a roll call vote the Commission voted to recommend approval of Z-0009-2016, 124 and 130 Riverview Plantation Drive (4-3). Ayes: Richardson, Basic, Wright, O'Connor. Nays: Schmidt, Bledsoe, Krapf.

Mr. Basic stated that he wanted to clarify that the Planning Commission is only a recommending body and that the Board of supervisors would make the final determination at its meeting in November.

3. ZO-0001-2016, Zoning Ordinance Revisions to Allow Places of Public Assembly, Including Those Used Primarily as an Event Facility, in A-1, General Agricultural, and R-8, Rural Residential Districts

Ms. Ellen Cook, Principal Planner, presented a report to the Commission on the proposed Zoning Ordinance amendments to allow event facilities for private special events in the A-1, General Agriculture and R-8, Rural Residential Districts. Ms. Cook noted that the ordinance amendments were incorporated in the Planning division's 2015/2016 Work Plan in response to inquiries from citizens who are interested in starting privately run-for-profit event facility businesses on parcels in Rural Lands. Ms. Cook stated that the draft ordinance proposes changes to the use lists in A-1, General Agricultural, and R-8, Rural Residential, and changes to Article II, Special Regulations, to create a new Section 24-48 that lists the standards that a place of public assembly used primarily as an event facility would need to meet in order to proceed as a by-right use.

Ms. Cook stated that in both A-1 and R-8, deletes the uses "houses of worship and cemeteries accessory hereto" and "lodges, civic clubs, fraternal organizations or service clubs" and consolidates them into the use "place of public assembly," consistent with what has been done previously in the other Zoning Ordinance districts. Further, the places of public assembly use is listed in three parts, with "places of public assembly used primarily as an event facility in accordance with Section 24-48" listed as a permitted use and "places of public assembly" and "places of public assembly used primarily as an event facility not in accordance with Section 24-48" listed as SUP uses.

Ms. Cook further stated that a new section (Section 24-48) has been added to the Special Regulations section of the Ordinance, which lists the performance standards for event facilities. Ms. Cook stated that the R-8 Use List is reformatted as a table to make it consistent with the other zoning districts, and the "group home" use has been updated to be consistent with state code requirements and with what has been done previously in the other residential Zoning Ordinance districts.

Ms. Cook stated that staff recommends the Planning Commission recommend approval of these amendments to the Zoning Ordinance to the Board of Supervisors.

Mr. O'Connor opened the floor to questions from the Commission.

Ms. Bledsoe inquired about the time limit of 30 days for a tent to stay up.

Ms. Cook stated that the time limit was set to be consistent with Building Safety & Permits regulations for temporary tents.

Mr. O'Connor inquired about the rationale behind requiring civic organizations to apply for a special use permit while it is a by-right use for private property owners.

Mr. Krapf stated that his understanding was that if a civic organization constructed a facility on its property dedicated solely to its use, it fell outside the intent of the ordinance. Mr. Krapf further stated that the difference would be if a civic organization constructed an event facility on rural lands and had not only their meetings at the location but also opened it up commercially for other uses, it would still be a by-right use if it were on an arterial road, but would require an SUP if it were on a collector road.

Mr. O'Connor stated that he was still struggling with the SUP requirement for civic organizations.

Mr. Krapf noted that for event facilities not located on an arterial road, all property owners would have to apply for an SUP.

Ms. Bledsoe requested an example of a local arterial road in rural lands.

Ms. Cook stated that parts of Route 5, Monticello Avenue, Centerville Road and Route 60 and Route 30 from Anderson's Corner going north.

Mr. O'Connor opened the public hearing.

Ms. Linda Rice, 2394 Forge Road, stated that she represents Friends of Forge Road. Ms. Rice addressed the Commission on concerns about retaining the historical character of Forge Road. Ms. Rice further noted concerns about the impact of additional traffic on a rural collector road and the impact of noise on adjacent property owners. Ms. Rice requested that the Commission consider eliminating the use on collector roads.

Ms. Jess Aiken, 8409 Attleborough Way, addressed the Commission in support of the ordinance amendments. Ms. Aiken noted that allowing the development of event facilities would fill a market need as there are only a few facilities that can accommodate large parties and would bring economic benefit to the County. Ms. Aiken noted that the performance standards or SUP conditions would ensure that the impacts are mitigated.

As no one further wished to speak, Mr. O'Connor closed the public hearing.

Mr. O'Connor opened the floor to discussion by the Commission.

Mr. Krapf stated that, as a disclosure, he is on the Board of Friends of Forge Road; however, he does not have a conflict of interest for this matter. Mr. Krapf stated that as Chair of the Policy Committee, he has been involved in discussion of the ordinance amendments from the outset. Mr. Krapf stated that he has examined all sides of the matter and can make an unbiased decision.

Mr. Basic inquired about the Policy Committee addressing the difference between private events on private property and the commercial events.

Mr. Krapf stated that under County Code there is a mechanism to obtain a permit for a one-time special event. Mr. Krapf stated that these amendments stemmed from recommendations from the Rural Economic Development Committee to find a mechanism to use rural lands for something other than residential development. Mr. Krapf further stated that by adding the use to the ordinance, it eliminated the need to apply for a permit for every single event and put the use on a commercial footing.

Mr. Richardson confirmed that the effort is has been to craft a policy that would allow these types of events to go forward.

Mr. Basic stated that it is difficult to find acceptable uses that allow owners of property designated rural lands to derive economic benefit from their property.

Ms. Cook clarified that private events on private property do not fall under the ordinance amendments or under the County's Special Event process. Ms. Cook further stated that a major public event with an attendance of 200 or more would require a Special Event Permit. Ms. Cook stated that the ordinance covers events where people are paying for the use of the facility.

Mr. Wright stated that it is likely that the use is already occurring without the County's knowledge. Mr. Wright further stated that the ordinance amendments are a way to set forth required criteria and to mitigate impacts. Mr. Wright noted that the Policy Committee considered a number of options that were broader than the final language. Mr. Wright further noted that the final ordinance language reflects of what will benefit property and business owners and what will protect adjacent property owners.

Ms. Bledsoe expressed appreciation for the work of the Policy Committee. Ms. Bledsoe noted that the Committee had addressed the majority of concerns noted by the public. Ms. Bledsoe stated that she is supportive of the ordinance amendments.

Mr. Krapf noted that he was the dissenting vote to moving forward with the ordinance amendments. Mr. Krapf stated that he had initially considered event facilities for weddings to be a benign use initially; however, the category of "Places of public assembly" is too broad and leaves open an opportunity for events with more impact such as motorcycle rally group that would hold periodic events and reach the cap of 300 attendees. Mr. Krapf stated that agri-tourism is addressed separately in the Zoning Ordinance and that event facilities are not an agri-tourism initiative. Mr. Krapf further stated that agri-tourism usually follows normal business hours where the traffic impacts are spread out over those hours while traffic for an event is arriving and departing at approximately the same time. Mr. Krapf stated that collector roads are generally not signalized at intersections which would create the potential for significant traffic delay at those intersections. Mr. Krapf further noted that the narrowness of collector roads increases the impact of traffic. Mr. Krapf stated that he is fully supportive of the portion of the ordinance amendments related to event facilities located on arterial roads; however, because the category of "Places of public assembly" broad and a special use permit runs with the land he cannot support the inclusion of parcels located on collector roads.

Mr. Richardson stated that because event facilities on collector roads would require an SUP, it would ensure that the impacts would be considered. Mr. Richardson further stated that he believes this is an appropriate mechanism for allowing property owners to derive economic benefit from their land. Mr. Richardson stated that he supports the amendments.

Ms. Bledsoe requested that Mr. Richardson elaborate on the types of events that could be held.

Mr. Richardson stated that the discussion covered a wide range of potential events.

Ms. Cook stated that the ordinance defines it as a place to host functions. Ms. Cook further stated that the Zoning Administrator would make a determination if the use was in accord with

being a place for hosting functions. Ms. Cook stated that the ordinance lists examples as weddings, anniversaries, meetings and conferences; however, this is not an exclusive list.

Ms. Bledsoe inquired if a motorcycle rally would fall under that definition.

Ms. Cook stated that it would be necessary to know the exact parameters and details for the event to make a determination.
Ms. Bledsoe stated that it seems it would be necessary to meet with staff and discuss the type of event to ensure that it would be appropriate rather than being able to just purchase the property and host any event they want at any time they want.

Mr. Holt stated that because the ordinance focuses on land use and land use types there would not be an ability to distinguish in the Zoning Ordinance between arriving at an event in a car or a motorcycle.

Ms. Bledsoe stated that the difference is what people use as a normal mode of transportation and an event where everyone would arrive on motorcycles because of the nature of the event.

Mr. Wright stated that this was the purpose of requiring an SUP for event facilities on collector roads. Mr. Wright further stated that the SUP requirements were helpful in alleviating his concerns.

Ms. Bledsoe stated that her experience is that the Zoning Administrator does follow up on complaints and would pursue enforcement options.

Mr. Krapf state that the SUP trigger is helpful; however, once the SUP is approved there is no further oversight of the types of activities that take place. Mr. Krapf further stated that even if, for example, the facility were used exclusively for weddings, there could still be a substantial impact on a collector road every weekend for more than six months out of the year. Mr. Krapf stated that while the SUP would address many concerns, there is still no limit on frequency or limitation on the types of events that could occur.

Mr. Basic stated that he is also concerned that the SUP would run with the land. Mr. Basic stated that what the original owner proposes might be far different than what a subsequent owner might do. Mr. Basic stated that he is eager to find viable solutions for property owners to profit from their land; however, he has some reservations about the impacts of this option as it stands. Mr. Basic noted that if the amendments are approved and problems occur, it would be possible to recraft the regulations. Mr. Basic stated that he is willing to take a chance on allowing the event facilities rather than turning down yet another proposal for using rural lands for economic gain.

Mr. Schmidt inquired if open air concerts would be allowed under the ordinance.

Ms. Cook stated that an event of that nature where the event was open to the public and the attendance was over 200, would need to apply for a Special Event Permit. Ms. Cook further stated that the event facility could operate under normal parameters for other events and apply for the occasional Special Event Permit.

For clarification, Mr. O'Connor and Mr. Richardson inquired about whether a commercial amphitheater would fall under the category of an event facility.

Mr. Schmidt noted that despite the acreage requirements, the impact of noise on adjacent property owners could be a concern because of the configuration of the lot. Mr. Schmidt stated that he would be more comfortable with an SUP process for properties on arterial roads to start and potentially including properties on collector roads in the future.

Mr. Richardson stated that the County is trying to find uses for rural lands other than farming. Mr. Richardson further stated that if the goal is to maintain the County's rural character, it is necessary to foster economic enterprise. Mr. Richardson stated that the ordinance amendments would establish regulations for activities that are already occurring without the County's knowledge and without regulation. Mr. Richardson stated that he believes a less restrictive ordinance would foster compliance.

Mr. Holt stated the ordinance contains regulations for noise, limits on hours of operation and requirements for sources of amplified sound to be oriented toward the interior of the property. Mr. Holt noted that this was a substantial concern that the Policy Committee worked to address through the regulations.

Ms. Bledsoe stated that she is surprised that there is still so much concern over the ordinance amendments, considering the in depth review by the Policy Committee and the recommendations to bring it forward for review by the Planning Commission.

Mr. Schmidt stated that because of the variety of lot sizes and configurations, he believes it would be best to consider each request on a case by case basis.

Mr. Krapf stated that it is important to remember that agri-tourism is a different category in the Zoning Ordinance and that event facilities are not the one and only attempt at bringing business revenue to rural lands. Mr. Krapf noted that there were a number of agri-tourism opportunities proposed by the consultant to the Rural Economic Development Community. Mr. Krapf noted that he is not advocating stifling economic development in rural lands because it is preferable to residential development.

Mr. Basic inquired what the approval conditions for an SUP might include.

Mr. Holt stated that they would be site specific. Mr. Holt further stated that the performance standards for those operations of a small enough scale to be considered by-right would be similar to the SUP conditions and would include limitations on noise and hours of operation, limitations on size and buffer and screening requirements, among others.

Mr. Basic stated that the genesis of the questions was to determine how the conditions of the initial SUP might impact and restrict what future property owners could do.

Mr. O'Connor stated that he was trying to understand the goal of the amendments; whether the goal is to protect rural lands for future farming activities or whether it is to protect a rural look and feel to the community. Mr. O'Connor stated that he believes it is the rural look with open space and lack of density that appeals to most people.

Mr. Richardson stated that is important to both protect land for future farming and to protect the look of the County. Mr. Richardson stated that there are initiatives to promote farming. Mr. Richardson stated that it will be difficult to find suitable land in the future when these initiative come to fruition. Mr. Richardson stated that preserving the look is also important.

Mr. O'Connor stated that a ten acre parcel is different from some of the much larger parcels. Mr. O'Connor stated that during the last Comprehensive Plan review, there were a number of property owners seeking to change their properties to mixed-use or economic opportunity in order to have more viable uses for the land. Mr. O'Connor stated that regarding the traffic on a collector road, that there are already a number of collector roads in the County that experience extremely high volumes of traffic on a daily basis. Mr. O'Connor stated that it is not likely that events would occur every day and not at the maximum attendance allowed under the ordinance. Mr. O'Connor stated that he believes the concerns are not well founded. Mr. O'Connor further stated that he does not concur with requiring civic organizations to obtain an SUP.

Ms. Cook stated that facilities used exclusively by a membership group do not fall under the definition of an event facility. Ms. Cook further stated that if the facility is rented out, then it could become a by-right use if all the performance standards are met.

Mr. O'Connor inquired how that would be enforced.

Mr. Holt stated that it goes back to the principal use of the property. Mr. Holt stated that if you have, for example, a Moose Lodge on the property that is the primary use.

Mr. O'Connor inquired whether the primary use would change if the facility were used for the civic organization's monthly meeting and rented out for profit the remainder of the month.

Mr. Holt stated that it would be a different primary use.

Mr. O'Connor inquired what would prevent a civic organization from constructing an event facility in order to avoid the SUP process.

Mr. Wright stated that his understanding is that a civic organization could build a for profit facility and if they chose to use it once a month for their monthly meeting, it would be acceptable.

Mr. O'Connor stated that he concurs with Mr. Wright's interpretation. Mr. O'Connor further stated that his concern is that the SUP requirement puts civic organizations at a disadvantage and they are meeting less than other groups.

Mr. Richardson stated that there are already other localities with similar facilities. Mr. Richardson stated that the ordinance amendments would provide ground rules for facilities that might otherwise crop up without any oversight. Mr. Richardson stated that he understands the concerns about the requirements for civic organizations. Mr. Richardson noted that those requests would likely be infrequent.

Mr. Holt stated that previously lodges, civic clubs, fraternal organizations and service clubs were a specially permitted use and continue to be so under the new title "places of public assembly" which is consistent with all the other zoning districts. Mr. Holt further stated that the distinction is made with the subset for "places of public assembly used primarily as an event facility" Mr. Holt stated that the determination of which definition the proposed facility falls under will depend on details about the use of the facility.

Mr. Wright stated that the Policy committee went through an exhaustive review and addressed a vast number of potential issues. Mr. Wright stated that the amendments were forwarded to the Planning Commission because the Policy Committee believed that all the issues had been

thoroughly vetted and the draft language was as close as possible to the Comprehensive Plan recommendations for rural lands.

Ms. Bledsoe stated that her gauge as to whether an ordinance should move forward is the Planning Director's comfort level in addressing questions. Ms. Bledsoe stated that Mr. Holt has not hesitated in his response to questions and that leads her to believe that it has been discussed and documented. Ms. Bledsoe stated that considering various scenarios is helpful because that is a way to identify pitfalls; however, at some point it is necessary to come to a decision.

Mr. O'Connor stated that he is an advocate for the amendments. Mr. O'Connor stated that he was in favor of requiring an SUP in all cases because there are no design standards which would allow by-right development of a structure that is not compatible with the rural character. Mr. O'Connor further stated the legislative process ensures that the final product is suitable.

Ms. Bledsoe requested that Mr. Holt respond.

Mr. Holt stated that there are no architectural controls or standards.

Mr. Schmidt inquired about options to move forward but to make changes to the draft language.

Mr. O'Connor stated that someone could make a motion and the vote would be taken.

Mr. Holt stated that the options would be to refer the matter back to the Policy Committee for further consideration or to send the matter forward to the Board of Supervisors.

Mr. Basic made a motion to recommend approval of ZO-0001-2016.

On a roll call vote the Planning Commission voted to recommend approval of ZO-0001-2016, Zoning Ordinance Revisions to Allow Places of Public Assembly, Including Those Used Primarily as an Event Facility, in A-1, General Agricultural, and R-8, Rural Residential Districts (4-3) Ayes: Richardson, Bledsoe, Basic, Wright. Nays: Schmidt, Krapf, O'Connor.

4. ZO-0009-2016, Zoning Ordinance Amendments to the Mixed Use District

Ms. Ellen Cook, Principal Planner, provided a report to the Commission on the proposed ordinance amendments to the Mixed Use district. Ms. Cook stated that Zoning Ordinance to provide additional flexibility in the Mixed Use District was proposed as part of the Planning Division's 2015-16 work program, Ms. Cook stated that the flexibility was to accommodate circumstances such as development of mixed-use structures, i.e. vertical mixed-use, or mixed use development on parcels less than five acres total and mixed use development in an infill or redevelopment context. Ms. Cook stated that the draft amendments eliminate the restriction on mixed use development on parcels less than five acres, clarifies the mix of uses requirement calculation as it applies to mixed-use structures, adds specifications for Mixed-Use zoned development in areas designated Neighborhood Commercial or Community Commercial, removes the prohibition on counting landscaped area adjacent to buildings toward the open space requirements and clarifies the right-of-way and perimeter buffer standards.

Ms. Cook stated that at its August 11, 2016 meeting, the Policy Committee voted to forward the ordinance amendments to the Planning Commission for consideration. Ms. Cook stated that staff recommends that the Planning Commission recommend approval of the amendments to the Board of Supervisors.

Mr. O'Connor opened the public hearing.

As no one wished to speak, Mr. O'Connor closed the public hearing.

Mr. O'Connor opened the floor to discussion by the commission.

Mr. Wright made a motion to approve ZO-0009-2016.

On a roll call vote, the Planning Commission voted to recommend approval of ZO-0009-2016, Zoning Ordinance Amendments to the Mixed Use District (7-0).

5. ZO-0010-2016, Zoning Ordinance Amendments to Allow Mobile Food Vending Vehicles (Food Trucks) in the M-1, Limited Business/Industrial District, the M-2, General Industrial District, the PUD-C, Planned Unit Development-Commercial District and the PL, Public Land District

Ms. Roberta Sulouff, Planner, presented a report to the Commission on the proposed ordinance amendments to allow mobile food vending vehicles in M-1, Limited Business/Industrial District, the M-2, General Industrial District, the PUD-C, Planned Unit Development-Commercial District and the PL, Public Land District. Ms. Sulouff stated following the Initiating Resolution by the Board of Supervisors on April 12, staff worked with the Policy Committee to discuss with ordinance requirements for mobile food vending vehicles throughout the Commonwealth and develop draft ordinance language. Ms. Sulouff stated that the current ordinance language incorporates recommendations by the Policy Committee over the course of several meetings in May, August and September. Ms. Sulouff stated that the draft language also incorporates feedback resulting from an online survey and a community meeting, as well as feedback from the County Attorney's Office. Ms. Sulouff stated that staff proposes that mobile food vending vehicles be added as a permitted use, subject to requirements to be established in a new section providing performance standards. Ms. Sulouff noted that the proposed permitting process and operational standards would not apply to food trucks used in conjunction with special events where a special event permit is required or food trucks operating in conjunction with a private catered events. Ms. Sulouff stated that the proposed permitting process would be administered by the Zoning Administrator and would require the operator to provide a copy of a valid Health Department permit, verification of inspection by the Fire Department and documented consent from the owner of the property where the mobile food vending vehicle will operate. Ms. Sulouff stated that the performance standards included setback distances, parking requirements, signage and lighting requirements, waste disposal requirements and restrictions on hours of operation. Ms. Sulouff stated that at its September 15 meeting the Policy Committee voted to forward the draft ordinance to the Planning Commission for consideration. Ms. Sulouff stated that staff recommends that the Commission recommend approval of the ordinance amendments to the Board of Supervisors.

Mr. O'Connor opened the floor to questions by the Commission.

Ms. Basic inquired what would happen if a property owner withdrew permission to operate on the property.

Ms. Max Hlavin, Assistant County Attorney, stated that the property owner would submit a letter indicating that he wishes to withdraw his permission.

Mr. Holt stated that once permission is withdrawn, the mobile food vendor would be trespassing if he continued to operate.

Mr. Richardson inquired about the next steps for the ordinance amendments and the timeline for considering amendments to allow mobile food vending vehicles in the B-1, General Business District.

Ms. Sulouff stated that the two ordinance would remain on separate timelines and that these amendments would move forward to the Board of Supervisors in November, with the amendments to the B-1 District to follow in December depending on the recommendation of the Policy Committee.

Mr. O'Connor opened the public hearing.

As no one wished to speak, Mr. O'Connor closed the public hearing.

Mr. O'Connor opened the floor for discussion by the Commission.

Mr. Schmidt commended staff on the thoroughness of their research and public outreach.

Ms. Bledsoe commended staff on their efforts. Ms. Bledsoe stated that she is excited to see this use opened up in these zoning districts.

Mr. Krapf made a motion to approve ZO-0010-2016.

On a roll call vote the Commission voted to recommend approval of ZO-0010-2016, Zoning Ordinance Amendments to Allow Mobile Food Vending Vehicles (Food Trucks) in the M-1, Limited Business/Industrial District, the M-2, General Industrial District, the PUD-C, Planned Unit Development-Commercial District and the PL, Public Land District (7-0).

6. Z0-0011-2016, Wireless Communications Facilities and Towers

Ms. Savannah Pietrowski, Planner, presented a report to the Commission on the proposed changes to the Wireless Communications Facilities (WCF) Ordinance and the Board of Supervisors Wireless Communications Facilities Policy. Ms. Pietrowski stated that part of the updates were initially proposed as part of the Planning Division's 2015-2016 work program. Ms. Pietrowski stated that the request at that time was to consider how the ordinance requirements could be applied to other types of towers such as radio or microwave towers. Ms. Pietrowski stated that to address this issue, staff proposes replacing all references to WCFs with a more encompassing term - Communications Facilities, Antennas, Towers and/or Support Structures (CATS). Ms. Pietrowski further stated that each district's use list would be updated so that terms would be consistent throughout the Zoning Ordinance. Ms. Pietrowski stated that, in addition, staff has identified provisions of the Middle Class Tax Relief and Job Creation Act of 2012, which limit the parameters by which the County may evaluate wireless communication facilities applications. Ms. Pietrowski stated that as part of staff's evaluation of the WCF Ordinance, it is necessary and prudent for the County to amend processes and the Ordinance in order to comply with the Spectrum Act. Ms. Pietrowski stated that under the Spectrum Act, a locality may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station. Ms. Pietrowski further stated that the FCC guidance includes a "shot clock" dictating how long a locality has to act on an eligible request and includes provisions to

automatically grant an approval in the event that a locality does not take action within the specified timeline. Ms. Pietrowski stated that staff proposes to develop a separate application process for these requests and has proposed a new section of the ordinance covering submittal and processing requirements. Ms. Pietrowski stated that following discussion with the Policy Committee, staff has also proposed amendments to proactively address the implications of the Spectrum Act, such as decreasing the maximum by-right height for tower mounted facilities and enhancing language regarding concealment elements for new towers. Ms. Pietrowski stated that staff has also proposed revisions to the ordinance language regarding satellite antennas to reflect existing exemptions for small satellite dishes such as those used for television or internet service. Ms. Pietrowski further stated that staff proposes certain changes to address inconsistencies across the ordinance and certain formatting changes to prevent future inconsistencies from occurring. Ms. Pietrowski stated that most notably, staff proposes to move information on permitted tower heights from the height limitations section in each zoning district to the CATS ordinance. Ms. Pietrowski stated that at its meeting on August 11, the Policy Committee voted to forward the amendments to the Planning Commission for consideration. Ms. Pietrowski stated that the ordinance amendments have also been reviewed by a consulting attorney specializing in telecommunications. Ms. Pietrowski stated that the attorney has determined that the amendments are in accordance with federal telecommunications regulations. Ms. Pietrowski stated that staff recommend that the Commission recommend approval of the ordinance amendments to the Board of Supervisors.

Mr. Holt stated that he wanted to also recognize Scott Whyte, Senior Landscape Planner, who was also instrumental in developing the ordinance amendments.

Mr. O'Connor opened the floor for questions from the Commission.

Ms. Bledsoe inquired about the height regulations for alternative mounting structures.

Ms. Pietrowski stated that these regulations pertain antennas that are mounted on structures other than towers such as a water tower. Ms. Pietrowski stated that under the current ordinance, if the structure received a height limitation waiver, the antenna could be mounted along the side of the structure but could not exceed the height of the structure. Ms. Pietrowski stated that under the proposed regulations it would allow an antenna to exceed the height of the structure to which it is mounted where an increased height is needed for improved service range. Ms. Pietrowski stated that this change was made to encourage the use of existing alternative structures and potentially reduce the need for new towers.

Mr. Wright thanked staff for their efforts in developing the ordinance amendments.

Mr. O'Connor opened the public hearing.

As no one wished to speak, Mr. O'Connor closed the public hearing.

Mr. O'Connor opened the floor for discussion by the Commission.

Mr. Richardson stated that staff did an outstanding job on the ordinance amendments.

Ms. Bledsoe stated that she appreciated staff's creative approach to crafting the regulations.

Mr. O'Connor stated that resolving the inconsistencies will provide a smoother process going forward.

Mr. Richardson made a motion to approve Z0-0011-2016, Wireless Communications Facilities and Towers.

On a roll call vote the Commission voted to recommend approval of Z0-0011-2016, Wireless Communications Facilities and Towers (7-0).

G. PLANNING COMMISSION CONSIDERATIONS

There were no items for Planning Commission consideration.

H. PLANNING DIRECTOR'S REPORT

1. Planning Director's Report - October 2016

Mr. Holt stated that there was nothing more to add other than what was submitted in the Planning Commission packet.

Mr. Basic inquired about the status of the intersection improvements at Centerville Road and News Road.

Mr. Holt responded that the plans have been revised to eliminate the traffic circle and add a signal and turn lane. Mr. Holt stated that a design public hearing has been scheduled to present the changes. Mr. Holt further stated that a design public hearing has been scheduled for the Longhill Road, Phase I improvements.

I. PLANNING COMMISSION DISCUSSION AND REQUESTS

Mr. O'Connor requested that, for the discussion of the Warhill Sports Complex Master Plan Amendment at the November 2 meeting, staff be prepared to discuss short and long-term solutions for the intersection issues and options for use of the connector road.

J. ADJOURNMENT

Mr. Basic made a motion to adjourn.

The meeting was adjourned at approximately 10:55 p.m.

AGENDA ITEM NO. D.2.

ITEM SUMMARY

DATE: 11/2/2016

TO: The Planning Commission

FROM: Ellen Cook, Principal Planner

SUBJECT: Development Review Committee Action Item: Case No. C-0031-2106, Noland Blvd. AutoZone

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The applicant has submitted a conceptual plan proposing the demolition of an existing structure and the construction of a 7,381 square-foot store for retail sales of auto parts and accessories. This use will not include auto service bays as no vehicle service or repair is proposed.

Section 24-516 of the Zoning Ordinance states that "All development plans shall be consistent with the master plan. Development plans may deviate from the master plan if the Planning Director concludes that the plan does not significantly alter the character of land uses or other features or conflict with any conditions placed on the approval of rezoning."

Reason for DRC Review: Appeal of the Planning Director's determination that the application significantly alters the character of the land uses or other features or conflicts with any conditions placed on the corresponding legislatively-approved case associated with the master plan.

Link to DRC Agenda and Staff Report from the September 28 meeting:
http://jamescity.novusagenda.com/AgendaPublic/MeetingView.aspx?MeetingID=323&MinutesMeetingID=-1&doctype=Agenda

DRC Recommendation on September 28: Deferral until the October 26 meeting.

Link to DRC Agenda and Staff Report from the October 26 meeting:
http://jamescity.novusagenda.com/AgendaPublic/CoverSheet.aspx?ItemID=2043&MeetingID=324

DRC Recommendation on October 26: Approval of the Conceptual Plan as being consistent with the Master Plan, subject to conditions (3-1).

REVIEWERS:

Department	Reviewer	Action	Date
Planning Commission	Holt, Paul	Approved	10/27/2016 - 9:00 AM
Planning Commission	Holt, Paul	Approved	10/27/2016 - 9:00 AM
Publication Management	Burcham, Nan	Approved	10/27/2016 - 9:06 AM

Planning Commission	Holt, Paul	Approved	10/27/2016 - 9:18 AM

AGENDA ITEM NO. F.1.

ITEM SUMMARY

DATE: 11/2/2016

TO: The Planning Commission

FROM: Jose Ribeiro, Senior Planner II

SUBJECT: SUP-0014-2016/MP-0002-2016. Warhill Sports Complex Master Plan Amendment

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ATTACHMENTS:

	Description	Type
🗋	Staff Report	Staff Report
🗋	Unapproved Minutes from October 5, 2016, PC meeting	Minutes
🗋	Location Map	Exhibit
🗋	List of proposed amendments to the Master Plan	Exhibit
🗋	Proposed Master Plan	Exhibit
🗋	Adopted Master Plan	Exhibit
🗋	Traffic Impact Study (TIA)	Exhibit
🗋	Proposed SUP conditions	Exhibit
🗋	Resolution for consistency with Section 15.2-2232	Resolution
🗋	Location Map showing the service road	Exhibit
🗋	Correspondence from citizens	Exhibit

REVIEWERS:

Department	Reviewer	Action	Date
Planning Commission	Holt, Paul	Approved	10/27/2016 - 9:40 AM
Planning Commission	Holt, Paul	Approved	10/27/2016 - 9:40 AM
Publication Management	Babbitt, Katterina	Approved	10/27/2016 - 9:50 AM
Planning Commission	Holt, Paul	Approved	10/27/2016 - 9:50 AM

SUMMARY FACTS

Applicant:	Mr. John Carnifax, Director of the Parks & Recreation Department
Land Owner:	James City County
Proposal:	To amend the SUP and Master Plan for the Warhill Sports Complex to allow for the addition of a running center building, a Williamsburg Area Transit Authority (WATA) bus transfer station, the relocation of a proposed indoor sports facility (community gym) and other minor revisions.
Location:	5700 and 5720 Warhill Trail
Tax Map/Parcel Nos.:	3210100012 and 3210100012A
Project Acreage:	+/- 442.23 and 3.00 acres, respectively
Zoning:	PL, Public Lands
Comprehensive Plan:	Open space or recreation and federal, state and County land
Primary Service Area:	Inside

PUBLIC HEARING DATES

Planning Commission:	October 5, 2016, 7:00 p.m. (deferred by staff)
Planning Commission:	November 2, 2016, 7:00 p.m.
Board of Supervisors:	December 6, 2016, 6:30 p.m. (tentative)
Staff Contact:	Jose Ribeiro, Senior Planner II

FACTORS FAVORABLE

1. The proposal is compatible with surrounding zoning and development.

2. The proposal is consistent with the Comprehensive Plan adopted in 2015, "Toward 2035: Leading the Way."

3. On September 21, 2016, the Parks & Recreation Advisory Commission approved the proposed amendment to the Warhill Sports Complex.

FACTORS UNFAVORABLE

1. With the attached (SUP) conditions, staff finds that there are no unfavorable factors.

SUMMARY STAFF RECOMMENDATION

Staff recommends the Planning Commission recommend approval of this application to the Board of Supervisors, subject to the attached conditions. Staff also recommends that the Planning Commission find this application consistent with Section 15.2-2232 of the Code of Virginia.

PLANNING AND ZONING HISTORY

- The Board of Supervisors approved Z-0001-1998/SUP-0004-1998 on April 28, 1998. This allowed development of the site as a recreational complex.

- The Board of Supervisors approved MP-0005-2003/SUP-0017-2003 for the amendment of the Warhill Sports Complex Master Plan on July 13, 2004.

- The Development Review Committee approved a request for a Master Plan consistency (C-0008-2016) on February 24, 2016. This allowed the construction of two indoor swimming pools at the Williamsburg Indoors Sports Complex.

- The Development Review Committee approved a request for Master Plan consistency (C-0014-2016) for a community garden under the power lines on May 25, 2016.

PROJECT DESCRIPTION

Mr. John Carnifax, Director of the County Parks & Recreation Department has submitted a request to amend the adopted Master Plan for the Warhill Sports Complex. Major revisions to the Master Plan include the following improvements (for a summary of all changes to the Master Plan please refer to Attachment No. 3):

- *Relocation of the Indoor Sports Facility (community gym) labeled "G2" on the revised Master Plan.*

The community gym was originally planned next to the basketball courts. As proposed by this amendment, the facility would be relocated to an area next to the Sanford Wanner Stadium. The relocation will allow access to the community gym off a fully signalized intersection at Centerville Road and Opportunity Way. Further, compatibility of uses between the proposed gym and the stadium and proximity to existing parking areas, were reasons that factored in the decision to relocate the community gym.

- *The addition of the Williamsburg Running Center labeled as "AA" on the revised Master Plan.*

The proposed Williamsburg Running Center is the result of a proposed public-private partnership between James City County and the Williamsburg Running Center, funded by the Rick Platt Foundation (a nonprofit organization), to host a permanent facility at the Warhill Sports Complex that will support running events and preserve the history and future development of local running programs.

The proposed Running Center includes a new building which will serve as a base of operations for athletes, officials and spectators; a museum for honoring local athletes, office and storage for County staff, concessions, restrooms and parking for buses. The Running Center will also include a new start and finish field which can serve as a multi-use field for other sports activities as well. Ballfields (labeled as "B" on the revised Master Plan) will remain unaffected by the proposed Running Center.

- *The addition of a Williamsburg Area Transit Authority (WATA) Transfer Station, labeled as "BB" on the revised Master Plan.*

WATA is currently operating out of a transfer area at one of its stops (Walmart Supercenter site at 7321 Rochambeau Drive). However, this location is only temporary and there are plans to relocate to an area along Stadium Road within the Warhill Sports Complex site. According to WATA, the proposed location for the transfer station is ideal as it would provide a central point for transit services for its service area. The transfer station would consist of a small building for a customer service center, bus shelters and parking for buses and vehicles.

SURROUNDING ZONING AND DEVELOPMENT

- Located west of Route 199, south of Centerville Road (Route 614) and north of Longhill Road (Route 612), adjacent to Warhill and Lafayette High Schools.

- Surrounding zoning designations include:

  a. R-8, Rural Residential to the north and west (Camelot and vacant lands).

  b. R-2, General Residential to the east (Villages of Westminster, Scott's Pond, Winter Park) and to the south (Season's Trace, Longhill Gate).

  c. R-4, Residential Planned Community to the south (Mallard Hill).

  d. PL, Public Land to the south (Lafayette High School) and north (Warhill High School).

COMPREHENSIVE PLAN

1. The 2035 Comprehensive Plan Land Use Map designates the Warhill Sports Complex as mostly Open Space or Recreation with smaller areas designated as federal, state and County land. The 2035 Comprehensive Plan defines Open Space or Recreation lands as large, undeveloped areas used for recreation, historical or cultural resources or open space. Areas designated as state, federal and County land include publicly owned lands. Staff finds that the proposed improvements to Warhill Sports Complex is consistent with both designations.

2. Both Longhill and Centerville Roads are listed as suburban Community Character Corridors in the 2035 Comprehensive Plan. The proposed improvements will not be visible from these rights-of-way.

3. Surrounding Comprehensive Plan designations include:

   a. Federal, state and County land to the north and south.

   b. Low Density Residential to the east and west.

FINDING OF CONSISTENCY

Section 15.2-2232 of the Code of Virginia states, in part, that no public park facility be allowed unless the Planning Commission finds the location of the park "substantially" consistent with the adopted Comprehensive Plan. As previously stated, the Comprehensive Plan adopted in 2015, "Toward 2035, Leading the Way," designates the Warhill Sports Complex site as Open Space or Recreation and federal, state and County land. Also, as previously stated, staff finds this proposal consistent with the Comprehensive Plan since the Sports Complex will serve the County and region as a whole and because it is a public facility (i.e., owned and operated by James City County). For the Commission's consideration, a consistency determination resolution is included as Attachment No. 8.

PUBLIC IMPACTS

1. Anticipated Impact on Public Facilities and Services:

   a. *Streets.* The proposed improvements to the Warhill Sports Complex will continue to utilize the existing unsignalized access point at the Longhill Road/Warhill Trail/Longhill Gate Road intersection and the signalized access point at Centerville Road/Opportunity Way intersection. A Traffic Impact Analysis (TIA) was submitted by the applicant and reviewed by the Virginia Department of Transportation (VDOT), who concurred with the recommendations of the

analysis and made additional comments.

The Longhill *Road/Warhill Trail/Longhill Gate Road Intersection.*

According to the TIA (Attachment No. 6), at the unsignalized Longhill Road intersection, the southbound approach (exiting the park) currently operates at a Level of Service (LOS) F during the weekday p.m. and Saturday peak hours, but operates at acceptable levels during non-peak hours.

In order to address this existing deficiency at the Longhill Road intersection, the TIA recommends the following:

- Signalization or manual traffic control (police officer or similar) should be considered;
- Lengthening of the southbound right-turn lane on Warhill Trail; and
- Potential realignment of the residential driveway west of the intersection to align with Blue Bill Run at the Mallard Hill subdivision.

Regarding a traffic signal, the Manual for Uniform Traffic Control Devices, indicates that the Longhill Road intersection does meet the peak hour warrant, but does not meet the 8- or 4-hour warrant. VDOT typically does not allow signalization based only on the peak hour warrant. However, there is the need for some type of traffic control measures to mitigate peak hour impacts. Accordingly, SUP Condition No. 6 requires a Traffic Management Plan (TMP) to be submitted yearly addressing the circulation and queuing of vehicles within the project area. The TMP shall consist of measures such as, but not limited to, parking lot usage, signage, pavement markings or other vehicle control/directional devices and manual traffic control (police office or similar) at the intersection of Warhill Trail and Longhill Road.

The recommended lengthening of the southbound right-turn lane on Warhill Trail is addressed by SUP Condition No. 4. The recommendation to realign the residential driveway west of the intersection with Blue Bill Run is not specifically addressed at this time by this application as it would not fundamentally improve the current conditions at the intersection. However, this recommendation is likely to be addressed by the future implementation of the Longhill Road Corridor Study (adopted by the Board of Supervisors on October 14, 2014). The Corridor Study proposes the signalization of this intersection at which point the residential driveway west of the intersection would have to be relocated to avoid a conflict with the location of a traffic signal. Although the implementation of the improvements in this section of the corridor is based on available funding and its timeline is currently to be determined, staff will keep monitoring this recommendation as part of a TIA required to be submitted within five years (or less) from the date of approval of this application (SUP Condition No. 7).

Residents of Mallard Hill and Longhill Gate subdivisions have expressed concerns with this application in regards to traffic at the Longhill Road intersection, vehicles blocking intersections along Warhill Trail during queuing times and the general safety of vehicles traveling at opposite directions using a single turn lane to access the Sports Complex and Longhill Gate subdivision. Staff notes that with or without future development of the Sports Complex, the Longhill

Road/Warhill Trail intersection operates at a LOS F. According to the TIA, the Running Center will generate low daily trips during peak hours. The proposed community gym and the WATA transfer station will generate higher daily trips during peak hours, but these facilities will be accessed through Centerville Road. In order to limit impacts associated with vehicles blocking the intersection of residential streets along Warhill Trail during times of queuing, SUP No. 5 requires installation of signs and/or pavement markings to not block these intersections on Warhill Trail. Regarding concerns associated with turning movements onto the Sports Complex and Longhill Gate Road through a single turning lane, staff notes that this intersection was previously improved in the late 1990s by realigning the entrance of the Longhill Gate subdivision with the entrance of the Sports Complex. This realigned intersection was designed and constructed to VDOT standards.

The Centerville Road and Opportunity Way Intersection, Right-Turn Movements from Centerville Road onto Richmond Road and Westbound Route 199 Ramp.

The TIA for the Sports Complex did not recommend improvements to these intersections. However, VDOT has commented on the projected LOS for 2030 right-turn movements at the Centerville Road/Opportunity, Centerville Road/Richmond Road and Richmond Road/Westbound Route 199 ramp intersections. All three of these intersections currently have dedicated right-turn lanes. All three of these intersections are projected to have an overall LOS D during the weekday p.m. peak hour, which, in the past, has been found acceptable for this area of the County. The SUP Condition requiring submittal of a TIA will allow staff to keep monitoring the LOS for this intersection, including the right-turn movements.

The Service Road

In order to improve traffic flow, access and connectivity between the northern and southern portions of the Sports Complex, the Department of Parks & Recreation has proposed opening the service road (Attachment No. 9) year-round from 6 a.m. to 10 p.m. Currently, the service road is only opened during the spring and fall peak periods of use.

b. *Schools/Fire/Utilities.* No impacts anticipated. The site is served by public water and sewer. Prior to final site plan approval for the proposed improvements, the applicant must submit a Water Conservation Plan (SUP Condition No. 10).

c. *Environmental/Cultural/Historic.* Development of the proposed improvements are subject to the provisions of the adopted Powhatan Creek Watershed Management Plan, the Master Stormwater Management Plan for the Warhill Tract and compliance with the County's Special Stormwater Criteria.

According to the Archaeological Assessment of James City County, the park area is designated as a "moderately sensitive area." SUP Condition No. 2 requires the applicant to comply with the County's adopted Archaeological Policy.

d. *Nearby and Surrounding Properties.* The attached SUP conditions are proposed to mitigate impacts to nearby and surrounding properties, specifically impacts associated with visual screening and noise generation.

PROPOSED CONDITIONS

- The full text of the proposed conditions are provided in Attachment No. 7.

STAFF RECOMMENDATION

Staff finds the proposal to be compatible with surrounding zoning and development and that it is consistent with the comprehensive plan adopted in 2015, "Toward 2035: Leading the Way." On September 21, 2016, the Parks & Recreation Advisory Commission approved the proposed amendments to the Master Plan. Staff recommends the Planning Commission recommend approval of this application to the Board of Supervisors, subject to the attached conditions. Staff also recommends that the Planning Commission find this application consistent with Section 15.2-2232 of the Code of Virginia.

JR/kb
RevisedStaffReport

Attachments:
1. Unapproved Minutes from October 5, 2016, Planning Commission meeting
2. Location Map
3. List of proposed amendments to the Master Plan
4. Proposed Master Plan
5. Adopted Master Plan
6. Warhill Sports Complex Expansion Traffic Impact Analysis, dated September 19, 2016
7. Proposed SUP conditions
8. Resolution for consistency with Section 15.2-2232
9. Location Map showing the service road
10. Correspondence from citizens

Unapproved Minutes of the October 5, 2016
Planning Commission Meeting

SUP-0014-2016/MP-0002-2016, Warhill Sports Complex Master Plan Amendment

Mr. Paul Holt, Planning Director, stated that Mr. John Carnifax, Director of Parks & Recreation, has applied to amend the existing special Use Permit and Master Plan for the Warhill Sports Complex to allow for the conceptual possible addition of a running center building, a Williamsburg Area Transit Authority transfer station, the relocation of a proposed indoor sports facility and other minor revisions. Mr. Holt stated that the public hearing has been advertised and will need to be opened; however, staff recommends that the Planning Commission defer consideration of this application to its November 2, 2016 meeting. Mr. Holt stated that the deferral will allow staff and VDOT to evaluate traffic impacts

Mr. O'Connor inquired if any of the Commissioners were opposed to the deferral.

No Commissioners voiced an objection.

Mr. O'Connor opened the public hearing.

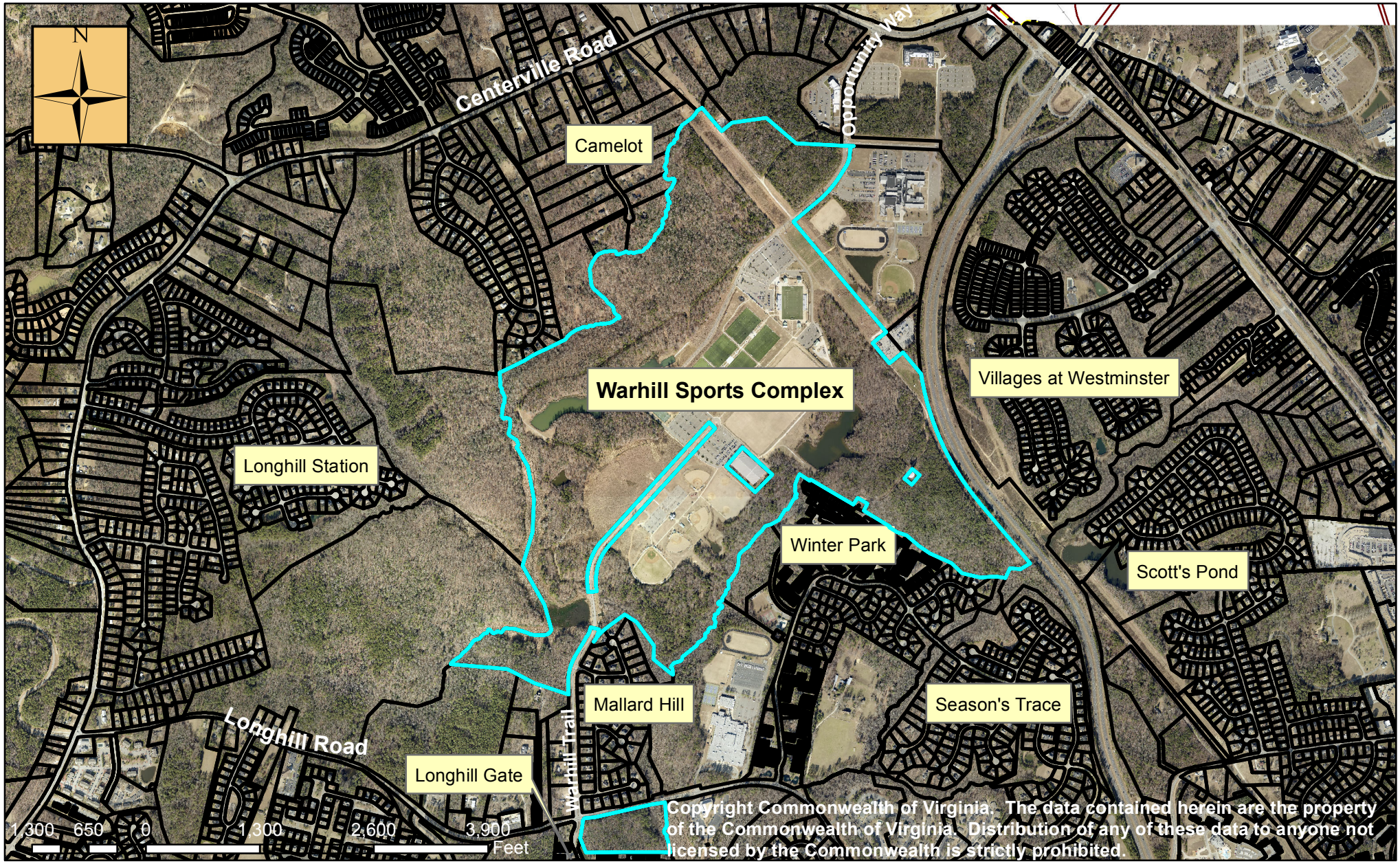
Mr. Jack Fowler, 109 Wilderness Lane, addressed the Commission on concerns about the design for the boat launch at Little Creek Reservoir. Mr. Fowler requested that the County address the Concerns at Little Creek Reservoir before spending funds to improve other facilities.

Ms. Tamara Johnson, a resident of the Mallard Hill subdivision, addressed the Commission on concerns about the vehicle speed on Warhill Trail. Ms. Johnson requested that the traffic considerations include the speed as well as the level of service at the intersection. Ms. Johnson stated that the resident would like an additional access point considered to alleviate the congestion.

Mr. Richard Minor, president of the Longhill Gate Home Owner's Association, addressed the Commission on concerns about the volume of traffic assessing the Warhill Sports Complex. Mr. Minor stated that a traffic signal would be beneficial, as would an additional access point. Mr. Minor further stated that the existing turn lanes on Longhill Road should be evaluated for safety.

As no one further wished to speak, Mr. O'Connor continued the public hearing to the November 2, 2016 Planning Commission meeting.

JCC-SUP-0014-2016/MP-0002-2016
Warhill Sports Complex



Summary of proposed revisions to the adopted Warhill Sport Complex Master Plan

1. Addition of a running center (“AA” on the proposed 2016 master plan) consisting of a multi-purpose room, office space, restrooms and a multi-sports field;

2. Addition of a WATA bus transfer station (“BB” on the proposed 2016 master plan);

3. Relocation of the indoor sports facility (“G2” on the proposed 2016 master plan and in the adopted 2004 Master Plan) closer to the football stadium and the parking in that area. The indoor sports facility is envisioned as a multipurpose facility with emphasis on volleyball and basketball practices and tournaments; and

4. Other changes include:
   a. The removal of the paved multi-use trail and shared parking from a power line easement (“N1” on the adopted 2004 Master Plan). According to the applicant, sufficient parking is available at the Warhill High School and Thomas Nelson Community College;

   b. The removal of picnic areas (“H” and “I” on the adopted Master Plan). According to the applicant, picnic shelters and passive recreation facilities will be added to Freedom Park, as needed; and

   c. The removal of the greenway access to Centerville Road (“K2” on the adopted Master Plan). This parcel was sold and has been developed and therefore unavailable as a third entrance.

2016 Warhill Sports Complex
Master Plan

A- Baseball Complex
- 5 Baseball Fields, lighted
- 1 Multiuse Field for T-ball
- Parking- 260-400 Spaces
- Concession/Rest Room Building

B- Softball Complex
- 4 Large Softball/Baseball Fields
- Parking- 260-400 Spaces
- Concession/Rest Room Building

C- Soccer Complex
- 8 Soccer Fields, adjustable orientation
- 6 Multiuse Fields with Synthetic Turf
- Parking- 440 Spaces
- Concession/Rest Room Building

D- Stadium Complex
- Football, Soccer, Track and Field, lighted
- 600-1000 Stadium parking, some shared, some available in the utility corridor (N1)

E- Sports Field Complex
- 2 Multi-purpose Practice Fields
- 1 Lighted Competition Field
- Bleachers for 500
- Concession/Rest Room Building

Parking - 160 Spaces

F- Multi-purpose Field Complex
- 8 Multi-purpose Fields, adjustable orientation, lighted
- Parking - 400 Spaces
- Concession/Rest Room Building

G1- Existing WISC Building

G2- Proposed Indoor Sports Facility

J1, J2, J3, J4, J5, J6
Unprogrammed Open Space

K1- Multiuse Nature Trail, soft surface, 3.5 Miles around park perimeter with connections to
- Lafayette High School, Seasons Trace, and other neighborhoods

L- Paved Multiuse Trail in utility corridor

M- Paved Multiuse Trails around Soccer Complex- 1 mile
- and Baseball/Softball Complex- 1-mile

N2- Unprogrammed Open Space capable of supporting additional stadium parking.

N3- Dominion Power Substation

Q- BMX Park

AA - Running Center, multi-purpose room, office space, restrooms, multiuse filed area

BB – Williambsburg Area Transport

1 inch = 972 feet

0 950 1,900 Feet

9/19/2016

Warhill Sports Complex
2004 Master Plan

A Baseball Complex
- 9 Baseball Fields, lighted
- 1 Multiuse Field for T-ball
- Parking 250-400 Spaces
- Concession/Rest Room Building

B Softball Complex
- 4 Large Softball/Baseball Field
- Parking 250-400 Spaces
- Concession/Rest Room Building

C Soccer Complex
- 8 Soccer Fields, adjustable orientation
- Parking 440 Spaces
- Concession/Rest Room Building

D Stadium Complex
- Football, Soccer, Track and Field, lighted
- 600-1000 Stadium parking, some shared, some available in the utility corridor (N1)

E Sports Field Complex
- 2 Multi purpose Practice Fields
- 1 Lighted Competition Field
- Bleachers for 500
- Concession/Rest Room Building
- Parking 160 Spaces

F Multi purpose Field Complex
- 8 Multi purpose fields, adjustable orientation, lighted
- Parking 400 Spaces
- Concession/Rest Room Building

G1 Existing WHC Building
G2 Proposed Indoor Sports/Basketball Facility

H Picnic Area
- 4 (or more) Picnic Shelters
- Loop Road with Parking on shoulders
- Access to 3 Ponds
- Picnic Benches
- Nature Trail around Pond
- Playground
- Volleyball and Basketball Courts
- Horseshoe Pits
- Multi Purpose Fields and Open Meadows
- Nature Center with Rest Rooms
- Fishing Platforms and Piers

I Picnic Area
- Picnic Shelters
- Loop Road with Access to Pond
- Picnic Benches
- Parking Shoulders on the Loop
- Nature Trail around Pond
- Playground
- Open Meadows
- Fishing Platforms and Piers

J1 Unprogrammed Open Space
J2 Unprogrammed Open Space
J3 Unprogrammed Open Space
J4 Unprogrammed Open Space
J5 Unprogrammed Open Space

K1 Multiuse Nature Trail, soft surface, 8 ½ Miles around park perimeter with connections to Lafayette High School, Museum Trees, and other neighborhoods
K2 Greenway access to Centerville Road

L Paved Multiuse Trail in utility corridor

M Paved Multiuse Trails around Soccer Complex 1 mile and Baseball/Softball Complex 1 mile

N1 Proposed joint development of shared parking between the stadium and future high school development on the remaining Warhill property within the Regional Utility Easement
N2 Unprogrammed Open Space capable of supporting additional stadium parking
N3 Dominion Power Substation

O Two options for a secondary park access to Centerville Road for park expansion, stadium and future high school development. Vehicular control needed to prevent cut through to Centerville Road, but open for secondary emergency access in accordance with the WHJT Deed Agreement

P Maintenance area 4 acres for maintenance, storage, and park headquarters/ranger information

Q BMX Park

Master Plan Summary

1998 Master Plan included A, B, C, D, E, L, P
- (1) (WHS) was built in 2003

2004 Master Plan includes L, P, F2, H, I, J, K, L, M, O, Q

1 in = [illegible] feet

April 2004

Warhill Sports Complex Expansion
Traffic Impact Analysis

James City County, Virginia

September 19, 2016

Prepared for:

James City County

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

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1 EXECUTIVE SUMMARY

This report presents the findings of the traffic impact analysis prepared in support of the revised Master Plan and the proposed expansion of the Warhill Sports Complex. The sports complex is a James City County Parks and Recreation facility that is generally located west of Route 199, south of Centerville Road (Route 614), and north of Longhill Road (Route 612) in James City County, VA as shown on Figure 1-1 (all figures are located at the end of the chapter).

The County is in the process of updating the 2004 Master Plan for the complex to include several new uses, in addition to the remaining unbuilt uses. See Appendix A for the proposed Master Plan.

For purposes of this analysis, the expansion of the complex was assumed to include the following:

- 14 outdoor athletic fields;
- Public gymnasium with three (3) basketball courts;
- Pool expansion;
- Running complex; and
- Williamsburg Area Transit Association (WATA) transfer station.

There are several other uses shown on the proposed Master Plan for the sports complex that will not be significant generators of traffic (i.e. multi-use trails, open space, etc.) and therefore are not explicitly included in the TIA relative to site-generated traffic.

The proposed expansion will utilize the existing access points to the sports complex; no changes in access points or types are proposed with this project. The sports complex is served by two access points; a full movement, signalized access point at the Centerville Road/Opportunity Way intersection (which serves the northern portion of the complex) and a full movement, unsignalized access point at the Longhill Road/Warhill Trail/Longhill Gate Road intersection (which serves the southern portion of the complex).

The northern and southern portions of the complex are connected by an access road that is gated (closed) at all times except for weeknights and weekends during the spring and fall peak periods of use; this connection is not well marked and appears to be used on a somewhat limited basis.

When complete, the expansion of the sports complex is estimated to generate an additional 382 weekday PM peak hour trips and 653 Saturday peak hour trips; this translates into 1,694 daily weekday trips and 2,629 daily Saturday trips.

The purpose of this analysis is to determine the impact of the proposed development on the surrounding roadway network in the year 2036.

Analyses were completed for the 2016 existing traffic volumes, the 2030 background volumes (without expansion), and the 2030 total future volumes (with expansion). Further, to provide a planning level analysis (for informational purposes only), a buildout plus 6 years (2036) scenario was analyzed using both 2036 background volumes and 2036 future total volumes. The buildout plus 6 years scenario is designed to help the County and VDOT with long range planning in the study area.

The scope of this study was developed in conjunction with James City County and Virginia Department of Transportation (VDOT) staff at a scoping meeting held on February 9, 2016 and subsequent correspondence.

The following steps were taken to determine the potential traffic impacts associated with this project:

1. Data Collection – Weekday PM (4:00 – 6:00), and Saturday (10:00 AM – 2:00 PM) peak hour turning movement counts were collected at the five (5) existing intersections within the study area. The counts were conducted on a typical weekday and Saturday when public schools were in session.

2. Traffic Growth – In accordance with the *Longhill Road Corridor Study* and historic VDOT traffic data, a 1% annual growth rate was applied to U.S. Route 60 and Longhill Road east of Warhill Trail while a 2% annual growth rate was applied to Centerville Road and Longhill Road west of Warhill Trail. No growth was applied to the other study roadways.

3. Other Development Trips – The trips that will be generated by the Lightfoot Marketplace development were added to the Centerville Road/Opportunity Way intersection.

4. Trip Generation – Traffic generated by the proposed development was estimated using the 9th edition of the Institute of Transportation Engineers' *Trip Generation Manual*.

5. Traffic Distributions – The distribution of trips generated by the proposed developed was based on the existing traffic volumes, the nature of the use, and local knowledge.

6. Traffic Projections – Future traffic volumes were determined using the existing traffic counts, the growth rates discussed above, the trips generated by Lightfoot Marketplace, and the trips generated by the site.

7. Traffic Capacity Analysis – Level of service calculations for existing, background, and future conditions were performed using SYNCHRO Version 9.1 (Build 907, Rev 6). The following intersections were analyzed:

    - U.S. Route 60/Centerville Road (signalized);
    - U.S. Route 60/Route 199 Eastbound Ramps (signalized);
    - U.S. Route 60/Route 199 Westbound Ramps (signalized);
    - Centerville Road/Opportunity Way (signalized); and
    - Longhill Road/Warhill Trail/Longhill Gate Road (unsignalized).

8. Queuing Analysis – The 95th percentile queue lengths (Synchro) and maximum queues (SimTraffic) were reviewed at the intersections listed above.

9. Signal Warrant Analysis – A review of the MUTCD signal warrants was conducted at the Longhill Road/Warhill Trail/Longhill Gate Road intersection.

This traffic impact analysis (TIA) has been prepared in accordance with (1) the procedures outlined in the Virginia Department of Transportation's (VDOT) Traffic Impact Analysis Regulations (henceforth referred to as Chapter 527), (2) the VDOT *Traffic Operations and Safety Analysis Manual (TOSAM)*, and (3) the Scope of Study agreed upon between James City County, VDOT, and Timmons Group (see Appendix B for the scoping agreement).

Based on the operational analyses the following is offered:

- The study area included the following intersections:
    - U.S. Route 60/Route 199 Eastbound Ramps (signalized);
    - U.S. Route 60/Route 199 Westbound Ramps (signalized);
    - U.S. Route 60/Centerville Road (signalized);
    - Centerville Road/Opportunity Way (signalized); and
    - Longhill Road/Warhill Trail (unsignalized).

- Existing weekday PM and Saturday peak hour traffic counts were conducted at the intersections on a Thursday and Saturday in May when public schools were in session and the sports complex fields were in use.

- For purposes of this analysis, the expansion of the sports complex was assumed to be completed by 2030.

- The TIA examined both the PM peak hour and Saturday peak hour under existing (2016) conditions, background (2030) conditions, and future total (2030) conditions with the proposed expansion of the sports complex. Additionally, a buildout plus six years (2036) scenario was analyzed for both background and future total conditions for planning purposes only.

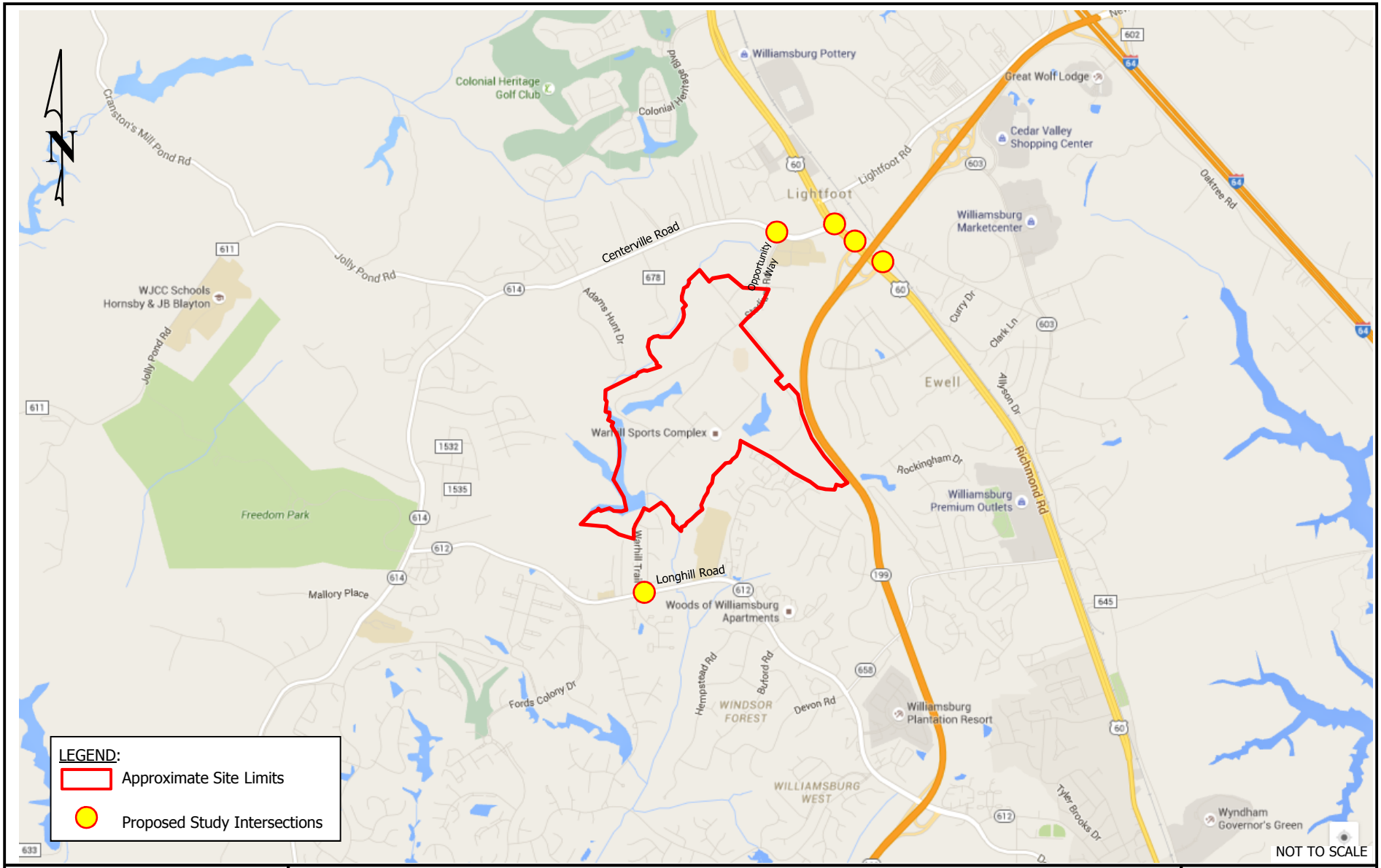
- The expansion of the complex was assumed to include:
    - 14 outdoor athletic fields;
    - Public gymnasium with three (3) basketball courts;
    - Pool expansion;
    - Running complex; and
    - WATA transfer station

- There are several other uses shown on the Master Plan for the sports complex that will not be significant generators of traffic (i.e. multi-use trails, open space, etc.) and therefore are not explicitly included in the TIA.

- The expansion of the sports complex is estimated to generate an additional 382 weekday PM peak hour trips and 653 Saturday peak hour trips; this translates into 1,694 daily weekday trips and 2,629 daily Saturday trips.

- The study intersections generally operate at acceptable LOS under existing conditions with the exception of the Longhill Road/Warhill Trail intersection.
    - Under existing conditions, the intersection fails during both the PM and Saturday peak hours and a traffic signal is needed for the intersection to operate at acceptable levels of service.
    - During non-peak hours, the intersection operates acceptably.
    - A traffic signal at this location was recommended at this intersection in the *Longhill Road Corridor Study*.

- Traffic entering the park is split equally between the two (2) entrances, while exiting traffic is skewed toward the Opportunity Way entrance (and traffic signal) due to the delays encountered at Longhill Road.



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Warhill Sports Complex
Site Location and Proposed Study Intersections

Figure
1-1

2 BACKGROUND INFORMATION

2.1 DESCRIPTION OF ON-SITE DEVELOPMENT

James City County is in the process of updating the Master Plan for the Warhill Sports Complex. The sports complex is a James City County Parks and Recreation facility that is generally located west of Route 199, south of Centerville Road (Route 614), and north of Longhill Road (Route 612) in James City County, Virginia as shown on Figure 1-1.

The County is updating the 2004 Master Plan for the complex to include several new uses in addition to the remaining unbuilt uses. The proposed Master Plan is included in Appendix A.

For purposes of this analysis, the expansion of the complex was assumed to include the following:

- 14 outdoor athletic fields;
- Public gymnasium with 3 basketball courts;
- Pool expansion;
- Running complex; and
- WATA transfer station.

There are several other uses shown on the proposed Master Plan for the sports complex that will not be significant generators of traffic (i.e. multi-use trails, open space, etc.) and therefore are not explicitly included in the TIA.

The proposed expansion will utilize the existing access points to the sports complex; no changes in access points or types are proposed with this project. The sports complex is served by two access points; a full movement, signalized access point at the Centerville Road/Opportunity Way intersection (which serves the northern portion of the complex) and a full movement, unsignalized access point at the Longhill Road/Warhill Trail/Longhill Gate Road intersection (which serves the southern portion of the complex).

The northern and southern portions of the complex are connected by an access road that is gated (closed) at all times except for weeknights and weekends during the spring and fall peak periods of use.

The study intersections are listed below and shown on Figure 1-1.

2.2 STUDY LIMITS

As agreed upon in the scoping agreement, the study limits include the following existing intersections:

1. U.S. Route 60/Centerville Road (signalized);
2. U.S. Route 60/Route 199 Eastbound Ramps (signalized);
3. U.S. Route 60/Route 199 Westbound Ramps (signalized);
4. Centerville Road/Opportunity Way (signalized); and
5. Longhill Road/Warhill Trail (unsignalized).

2.3 EXISTING ROADWAYS NETWORK

U.S. Route 60 (Richmond Road) is a four-lane, median divided principal arterial roadway within the study area with an average daily traffic (ADT) of 20,000 vehicles based on the latest available data (2015). This section has a posted speed limit of 45 miles per hour.

Route 199 (Humelsine Parkway) is a four-lane, median divided limited access facility within the study area with an ADT of 25,000 vehicles based on the latest available data (2015).

This section of Route 199 connects I-64 to the north with U.S. Route 60 to the south and serves as a southern bypass to the City of Williamsburg. The ramps with U.S. Route 60 are signalized.

Centerville Road (Route 614) is a two-lane undivided minor arterial roadway throughout most of the study area. From Opportunity Way to U.S. Route 60, Centerville Road is a four-lane median divided roadway. According to the latest available data (2015), this section of Centerville Road has an ADT of 9,300 vehicles.

This section of Centerville Road connects Monticello Avenue to the southeast with U.S. Route 60 to the northwest and has a posted speed limit of 45 miles per hour.

Longhill Road (Route 612) is a two-lane undivided minor arterial roadway within the study area with an ADT of 7,300 vehicles based on the latest available data (2015).

This section of Longhill Road connects Centerville Road to the west with Route 199 to the east and has a posted speed limit of 45 miles per hour.

The remaining study roadways are two-lane, undivided roadways with posted speed limits of 25 miles per hour.

2.4 FUTURE IMPROVEMENTS

There are no known planned or funded improvements that will impact the study intersections within the timeframe of this analysis.

Longhill Road is anticipated to be widened to four lanes throughout the study area, but James City County has indicated that this improvement will occur beyond the timeframe of this analysis and therefore was not included.

There are two recently completed road improvements to study intersections:

- An additional lane was added to the northbound approach (Route 199 off-ramp) to the U.S. Route 60/Route 199 Westbound intersection to create separate left and right turn lanes.
- In conjunction with the Lightfoot Marketplace development, a second westbound left turn lane was added to the Centerville Road/Opportunity Way intersection.

2.5 Other Modes of Transportation

In accordance with Chapter 527 regulations, this study also reviews the potential for walking, bicycling, and transit trips to and from the area.

Currently, there are sidewalks and/or multi-use trails on at least one side of all of the study roadways. Internal to the site, there is a multi-use path along both Opportunity Way and Warhill Trail.

The Williamsburg Area Transit Authority (WATA) provides bus service throughout the study area and a future transfer station is proposed within the Warhill Sports Complex.

While there is potential (and facilities) for trips to and from the site to be made via walking, bicycle, and transit, to be conservative, no reduction in trips was taken for other modes of transportation.

3 EXISTING CONDITIONS ANALYSIS

3.1 EXISTING TRAFFIC VOLUMES

Existing peak hour turning movement counts were collected at each of the study intersections during PM (4:00 – 6:00), and Saturday (10:00 AM – 2:00 PM) peak hour timeframes. The counts were conducted on a typical weekday and Saturday when public schools were in session and the existing fields at the sports complex were in full use. The counts included heavy vehicles by movement and pedestrian counts.

Since the study intersections are not completely contiguous, Timmons Group did not choose a common peak hour for the intersections. The existing traffic data with individual intersection peak hours is summarized on Figure 3-1. The complete traffic data is included in Appendix C.

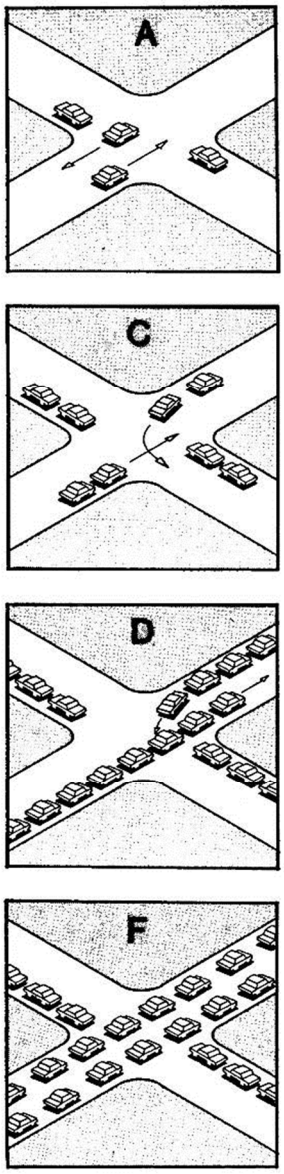
The data indicates that the peak hour of the individual intersections are generally consistent in the PM. On Saturday, the Longhill Road/Warhill Trail/Longhill Gate Road intersection peaks from 10:15 to 11:15 AM while the other intersections peak later (12:30 to 1:30 PM).

3.2 CAPACITY ANALYSES

Capacity analysis allows traffic engineers to determine the impacts of traffic on the surrounding roadway network. The Transportation Research Board's (TRB) *Highway Capacity Manual* (HCM) methodologies govern how the capacity analyses are conducted and how the results are interpreted. There are six letter grades of Levels of Service (LOS) from A to F, with LOS A representing the best operating conditions and LOS F the worst operating conditions. Table 3-1 shows in detail how each of these levels of service are interpreted.

Table 3-1: Level of Service Definitions

Level of Service	Roadway Segments or Controlled Access Highways	Intersections
A	Free flow, low traffic density.	No vehicle waits longer than one signal indication.
B	Delay is not unreasonable, stable traffic flow.	On a rare occasion motorists wait through more than one signal indication.
C	Stable condition, movements somewhat restricted due to higher volumes, but not objectionable for motorists.	Intermittently drivers wait through more than one signal indication, and occasionally backups may develop behind left turning vehicles, traffic flow still stable and acceptable.
D	Movements more restricted, queues and delays may occur during short peaks, but lower demands occur often enough to permit clearing, thus preventing excessive backups.	Delays at intersections may become extensive with some, especially left-turning vehicles waiting two or more signal indications, but enough cycles with lower demand occur to permit periodic clearance, thus preventing excessive backups.
E	Actual capacity of the roadway invloves delay to all motorists due to congestion.	Very long queues may create lengthly delays, especially for left-turning vehicles.
F	Forced flow with demand volumes greater than capacity resulting in complete congestion. Volumes drop to zero in extreme cases.	Backups from locations downstream restrict or prevent movement of vehicles out of approach creating a storage ares during part or all of an hour.



SOURCE: *"A Policy on Design of Design of Urban Highways and Arterial Streets"* - AASHTO, 1973 based upon material published in *"Highway Capacity Manual"*, National Academy of Sciences, 1965.

For signalized and unsignalized intersections, level of service is defined in terms of **delay**, a measure of driver discomfort, frustration, fuel consumption and lost travel time. Table 3-2 summarizes the delay associated with each LOS category:

Table 3-2: Signalized and Unsignalized Intersection Level of Service Criteria

Signalized Intersections		Unsignalized Intersections	
Level of Service	Control Delay per Vehicle (sec/veh)	Level of Service	Average Control Delay (sec/veh)
A	≤ 10	A	0 to 10
B	> 10 to ≤ 20	B	> 10 to ≤ 15
C	> 20 to ≤ 35	C	> 15 to ≤ 25
D	> 35 to ≤ 55	D	> 25 to ≤ 35
E	> 55 to ≤ 80	E	> 35 to ≤ 50
F	> 80	F	> 50

Source: Exhibit 16-2 and Exhibit 17-2 from TRB's "Highway Capacity Manual 2000"

Capacity analyses were performed to assess existing (2016), background (2030), and future (2030) operational conditions. The signalized and unsignalized intersections were analyzed using SYNCHRO Version 9.1 (Build 907, Rev 6) based on HCM 2000 methodologies with the following assumptions:

- Level terrain;
- 12-foot lane widths;
- No parking activity or bus stops;
- Existing peak hour factor as determined by the traffic counts (by intersection);
- Heavy vehicle percentage as determined by the traffic counts (by movement); and
- Traffic signals timing data provided by VDOT. Given the length of buildout (14 years), the cycle length and timings were optimized in all future scenarios.

The existing lane use and traffic control at the study intersections is shown on Figure 3-2.

3.3 2016 EXISTING TRAFFIC CONDITIONS

Table 3-3 summarizes the 2016 existing intersection LOS, delay, 95th percentile (Synchro) and maximum (SimTraffic) queue lengths based on the 2016 existing peak hour traffic volumes shown on Figure 3-1, the existing lane geometry shown on Figure 3-2, and the existing traffic signal timings. The 2016 existing PM and Saturday peak hour intersection LOS is shown on Figure 3-3. The corresponding SYNCHRO worksheets are included in Appendix D.

As shown on Table 3-3, each of the signalized study intersections currently operates at an overall LOS C or better. Several turn lanes or side-street approaches operate at LOS E during at least one of the peak hours. Similarly, the majority of 95th percentile (Synchro) and maximum (SimTraffic) queues are contained within the available storage, with several left or right turn lane queues extending beyond the available storage in one or both peak hours.

At the unsignalized Longhill Road/Warhill Trail/Longhill Gate Road intersection, the southbound approach (exiting the park) operates at LOS F during both peak hours with queues that extend beyond the available storage.

Table 3-3: Intersection Level of Service, Delay, and Queue Summary
2016 Existing Conditions

Intersection and Type of Control	Movement and Approach	Number of Lane	Turn Lane Storage (ft)	PM Peak Hour				Saturday Peak Hour			
				HCM 2000 Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]	Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]
1. US Route 60 (E-W) at	EB Left	1	225	51.5	D	65	102	57.0	E	37	62
Centerville Road (NB)/	EB Thru	2		34.2	C	297	293	29.8	C	314	341
Retail Entrance (SB)	EB Right[3]	1	425	0.6	A	0	223	0.3	A	0	136
Signalized	*EB Approach*			*21.0*	*C*	--	--	*21.5*	*C*	--	--
	WB Left	2	350	40.1	D	#258	241	36.9	D	94	159
	WB Thru	2		28.2	C	352	299	22.3	C	296	266
	WB Right	1	175	18.8	B	m0	184	16.9	B	m6	185
	WB Approach			*32.0*	*C*	--	--	*25.7*	*C*	--	--
	NB Left	1	225	55.5	E	#280	185	54.9	D	#286	213
	NB Thru-Left	1		55.5	E	#282	229	55.6	E	#293	253
	NB Right	1		39.6	D	75	183	41.3	D	129	257
	NB Approach			*49.2*	*D*	--	--	*48.4*	*D*	--	--
	SB Thru-Left	1		54.2	D	107	146	54.6	D	109	140
	SB Right	1	100	46.6	D	0	66	46.5	D	0	87
	SB Approach			*51.9*	*D*	--	--	*53.0*	*D*	--	--
	Overall			32.0	C	--	--	31.7	C	--	--
2. US Route 60 (E-W) at	EB Thru	2		24.0	C	198	276	13.9	B	211	361
Route 199 EB Ramps (N-S)	EB Right	1	450	74.2	E	82	181	16.4	B	30	166
Signalized	*EB Approach*			*40.7*	*D*	--	--	*14.6*	*B*	--	--
	WB Left	1	175	54.6	D	m45	118	49.2	D	m59	115
	WB Thru	2		9.2	A	361	265	6.7	A	247	197
	WB Approach			*10.7*	*B*	--	--	*9.4*	*A*	--	--
	NB Left	1	150	50.8	D	231	174	51.0	D	200	174
	NB Right	1		37.4	D	57	389	43.2	D	144	350
	NB Approach			*44.2*	*D*	--	--	*45.8*	*D*	--	--
	Overall			29.0	C	--	--	19.7	B	--	--
3. US Route 60 (E-W) at	EB Thru	2		26.1	C	201	318	29.0	C	456	390
Route 199 WB Ramps (N-S)	EB Right	1		28.8	C	38	120	42.0	D	72	148
Signalized	*EB Approach*			*26.6*	*C*	--	--	*31.7*	*C*	--	--
	WB Left	1	350	55.6	E	182	238	62.8	E	#293	299
	WB Thru	2		11.6	B	133	221	7.7	A	114	194
	WB Approach			*21.0*	*C*	--	--	*23.5*	*C*	--	--
	NB Left	1	525	47.7	D	#452	447	54.7	D	295	346
	NB Right	1		28.6	C	36	69	34.9	C	41	96
	NB Approach			*44.5*	*D*	--	--	*49.9*	*D*	--	--
	Overall			28.7	C	--	--	32.0	C	--	--
4. Centerville Road (E-W) at	EB Left	2	400	41.3	D	4	29	39.2	D	5	27
Opportunity Way (NB)/	EB Thru	1		21.3	C	#377	262	21.7	C	#368	314
Retail Entrance (SB)	EB Right	1	225	14.4	B	0	126	14.6	B	0	120
Signalized	*EB Approach*			*20.7*	*C*	--	--	*21.3*	*C*	--	--
	WB Left	2	250	43.3	D	#180	154	34.0	C	#135	129
	WB Thru	1		13.3	B	#446	222	11.5	B	239	189
	WB Right	1	200	7.9	A	0	2	9.1	A	0	20
	WB Approach			*25.1*	*C*	--	--	*21.0*	*C*	--	--
	NB Thru-Left	1		35.2	D	32	42	31.9	C	60	69
	NB Right	1	700	35.3	D	52	95	31.8	C	79	172
	NB Approach			*35.3*	*D*	--	--	*31.8*	*C*	--	--
	SB Left	1	135	41.4	D	5	23	40.0	D	8	12
	SB Thru-Left	1		42.5	D	8	13	39.8	D	8	23
	SB Right	1	135	42.8	D	8	17	43.8	D	13	23
	SB Approach			*42.4*	*D*	--	--	*41.9*	*D*	--	--
	Overall			25.3	C	--	--	24.2	C	--	--
5. Longhill Road (E-W) at	EB Left	1	200	11.2	B	22	108	10.2	B	15	90
Longhill Road (NB)/	EB Thru-Right	1		0.0	A	0	0	0.0	A	0	0
Warhill Trail (SB)	*EB Approach*			*2.8*	*A*	--	--	*2.5*	*A*	--	--
Unsignalized	WB Left	1	200	8.6	A	3	36	8.2	A	1	23
	WB Thru	1		0.0	A	0	3	0.0	A	0	0
	WB Right	1	200	0.0	A	0	42	0.0	A	0	52
	WB Approach			*0.3*	*A*	--	--	*0.2*	*A*	--	--
	NB Left-Thru-Right	1		30.5	D	18	52	16.6	C	7	47
	NB Approach			*30.5*	*D*	--	--	*16.6*	*C*	--	--
	SB Thru-Left	1		544.3	F	569	412	481.7	F	780	1032
	SB Right	1	215	544.3	F	569	199	481.7	F	780	240
	SB Approach			*544.3*	*F*	--	--	*481.7*	*F*	--	--

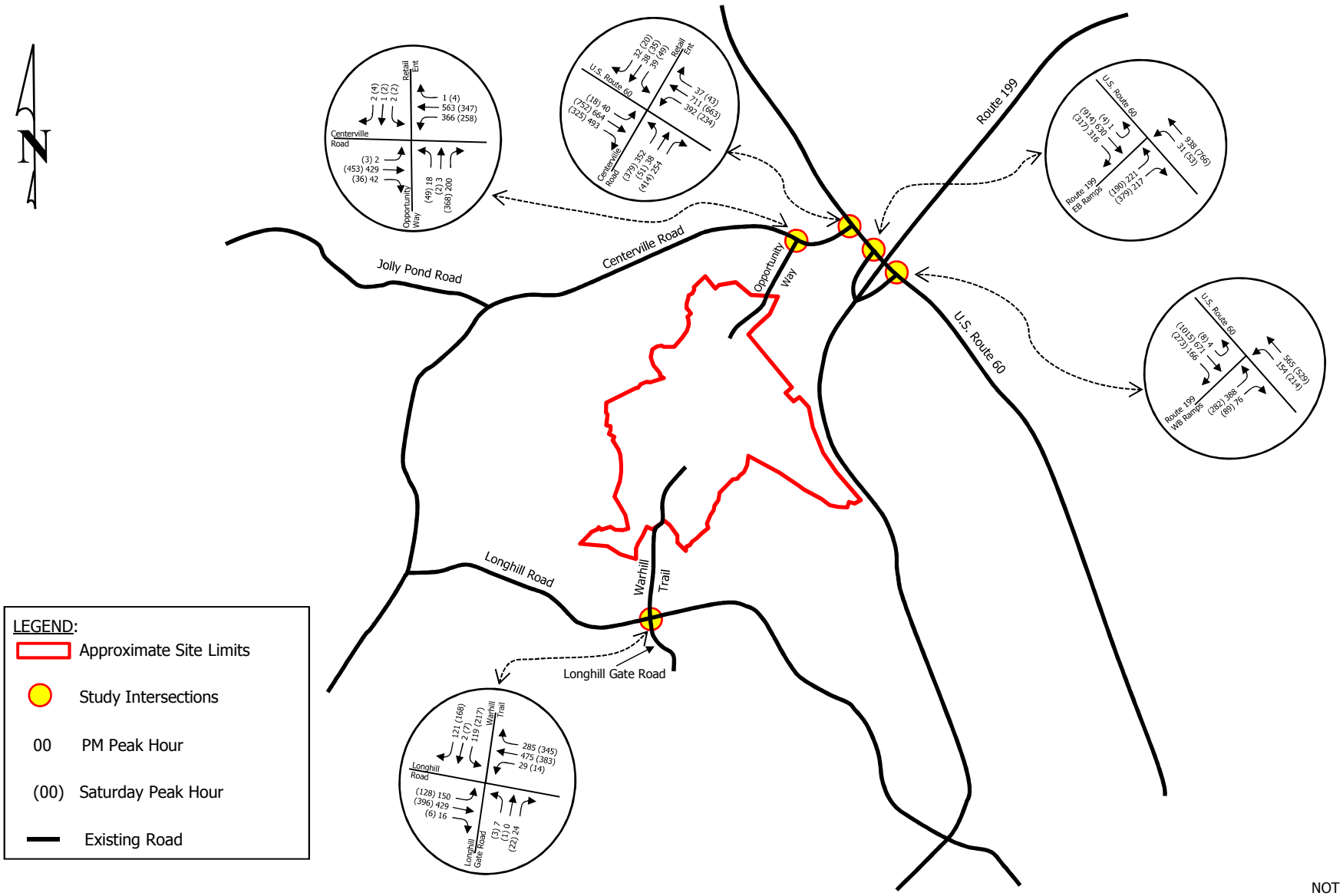
[1] *Overall intersection LOS and delay reported for signalized intersections and roundabouts only.*

[2] *When more than one lane is present, the highest maximum queue is reported.*

[3] *Eastbound right is channelized and operates under Yield control (not subject to traffic signal control).*

- 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

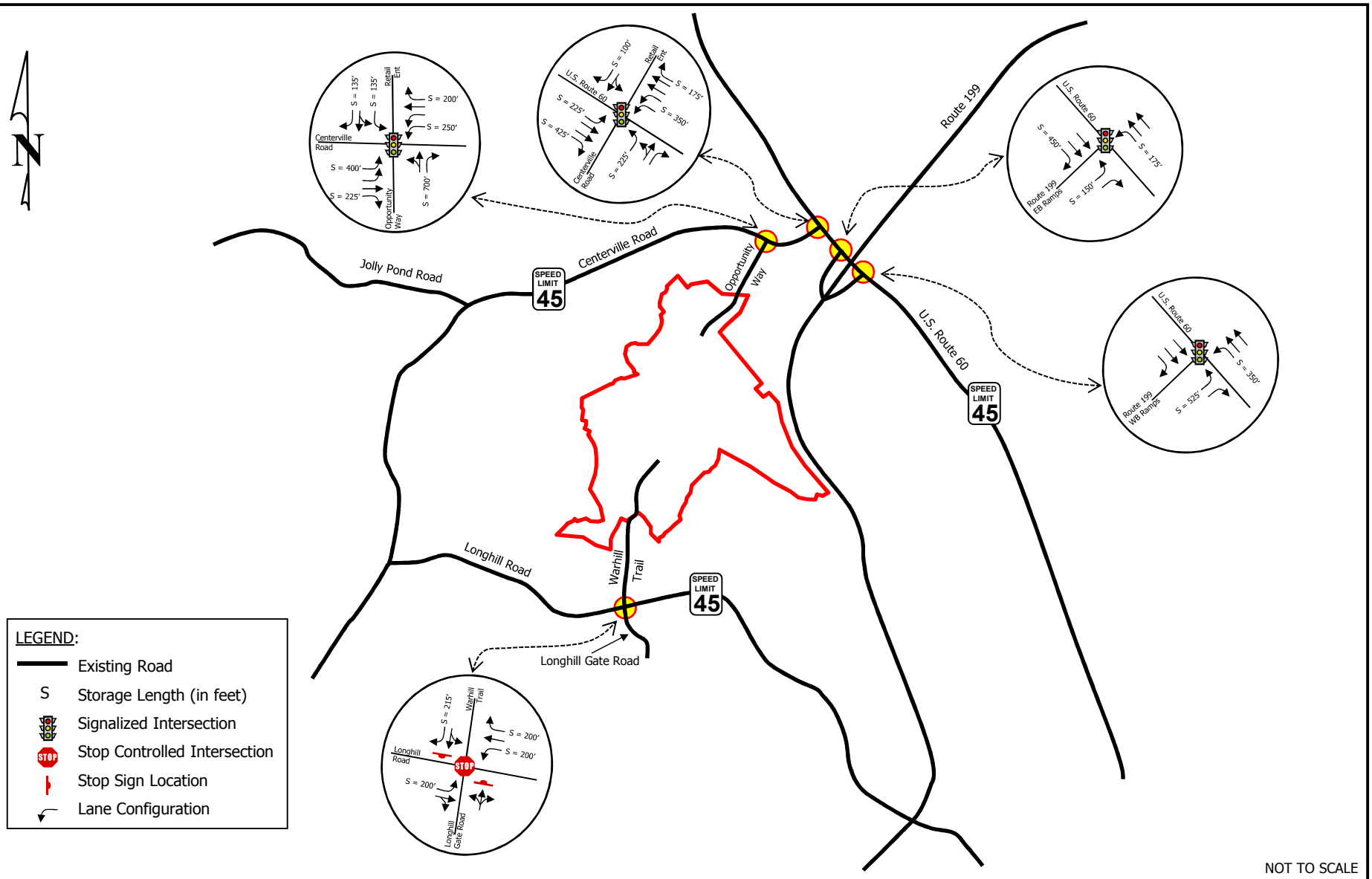
m - Volume for 95th percentile queue is metered by upstream signal.



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Warhill Sports Complex
2016 Existing Volumes

Figure
3-1



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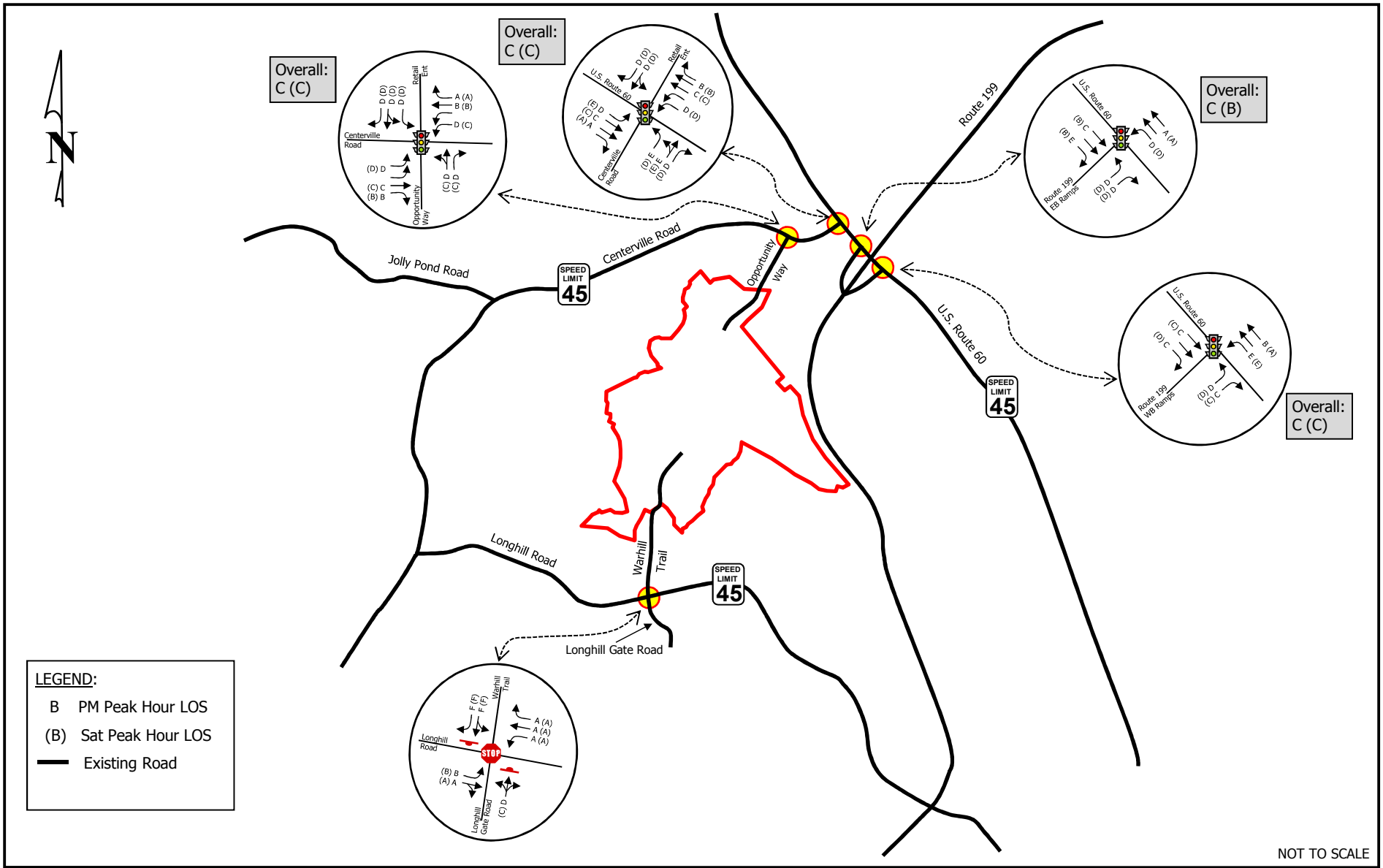
Warhill Sports Complex
Existing Geometry

Figure
3-2



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Warhill Sports Complex
Existing Peak Hour Levels of Service

Figure
3-3

4 2030 BACKGROUND CONDITIONS AND ANALYSIS

The background 2030 volumes were analyzed assuming existing intersection geometry and traffic controls in conjunction with projected background traffic volumes. Background traffic volumes are comprised of the existing traffic counts, trips from adjacent developments in the area, and background traffic growth.

4.1 ADJACENT DEVELOPMENT TRIPS

There is one (1) approved/unbuilt development in the study area that will be built by 2030. Lightfoot Marketplace, a redevelopment of the Williamsburg Outlet Mall, is currently under construction. At full development, Lightfoot Marketplace will consist of 136,122 square feet of retail space. A traffic impact analysis was completed for the development in 2013 by Bryant B. Goodloe, P.C. That study looked at AM and PM peak hours but did not include a Saturday peak hour analysis.

The trips that will be generated by the Lightfoot Marketplace were obtained from the TIA (for the PM peak hour) and estimated using the 9th edition of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* (for the Saturday peak hour). The trips are shown in Table 4-1.

Table 4-1: Lightfoot Marketplace Trip Generation

LAND USE	ITE CODE	AMOUNT	UNITS	WEEKDAY PM PEAK HOUR[1] ADT	IN	OUT	TOTAL	SATURDAY Midday Peak Hour[2] ADT	IN	OUT	TOTAL
Shopping Center	820	49,634	s.f.	4,307	195	203	398	2,480	124	115	239
Supermarket	850	58,000	s.f.	5,930	311	286	597	*10,300*	*315*	*303*	*618*
Pharmacy w/Drive-thru[3]	881	15,000	s.f.	1,322	78	78	156	1,230	*60*	*63*	*123*
High-Turnover Sit-Down Restaurant	932	13,488	s.f.	1,715	89	62	151	*2,136*	*101*	*89*	*190*
Total Proposed Trips				13,274	673	629	1,302	16,147	600	569	1,170
Pass-by Trips		25%		3,319	168	157	326	4,037	150	142	292
Net "New" Trips				**9,955**	**505**	**472**	**976**	**12,110**	**450**	**427**	**878**

Notes:
(1) PM Trip generation source: Lightfoot Marketplace TIA (12/6/2013) prepared by Bryant B. Goodloe, P.C.
(2) Saturday Trip generation source: Institute of Transportation Engineers' Trip Generation Manual 9th Edition (2012).
(3) Saturday ADT assumed at 10x peak hour since ITE has no Saturday ADT information for this use.

The fourth leg (northern approach) of the Centerville Road/Opportunity Way serves as a main entrance to Lightfoot Marketplace. Therefore, the trips shown in Table 4-1 were distributed to the Centerville Road/Opportunity Way intersection based on the information contained within the Lightfoot Marketplace TIA. The resulting Lightfoot Marketplace Trips are shown on Figure 4-1.

4.2 BACKGROUND TRAFFIC GROWTH

Background traffic growth accounts for development outside the study area and is estimated based on historic traffic data, census data, and other available traffic models/studies. In this case, the background traffic growth for both Longhill Road and Centerville Road was obtained from the *Longhill Road Corridor Study* prepared by Kimley-Horn in 2014. That study incorporated an annual growth rate of 2% on Centerville Road and Longhill Road west of Warhill Trail. East of Warhill Trail, the annual growth rate was 1%. It is important to note that the growth rates in the *Longhill Road Corridor Study* explicitly accounted for trips from other developments.

The study did not discuss a growth rate for U.S. Route 60. Based on historic VDOT traffic counts, the traffic on U.S. Route 60 has declined from 2010 (25,000 ADT) to 2015 (20,000 ADT). This trend is not likely to continue and therefore, to be conservative, a 1% annual growth rate was applied to U.S. Route 60 and the ramps from Route 199 onto U.S. Route 60. Similar to the *Longhill Road Corridor Study*, this growth rate accounts for trips from other developments (including Lightfoot Marketplace) outside the turning movements at the entrance discussed above.

4.3 2030 Background Traffic Volumes

The growth rates discussed above were compounded annually over the 14-year period for project buildout and applied to the study roadways. The growth was added to the existing traffic volumes (Figure 3-1) and the Lightfoot Marketplace Trips (Figure 4-1) and the resulting 2030 background volumes are shown on Figure 4-2.

4.4 2030 Background Traffic Volume Capacity Analysis

Table 4-2 summarizes the 2030 background intersection LOS, delay, 95th percentile (Synchro) and maximum (SimTraffic) queue lengths based on the 2030 background peak hour traffic volumes shown on Figure 4-2, the existing lane geometry (Figure 3-2), and optimized traffic signal timings. The 2030 background PM and Saturday peak hour intersection LOS is shown on Figure 4-3. The corresponding SYNCHRO worksheets are included in Appendix D.

As indicated in Table 4-2, under 2030 background conditions, the growth in background traffic will cause an increase in delay and queueing at the study intersections. Each signalized intersection will have multiple lanes/approaches that operate at LOS E during at least one of the peak hours.

At the Centerville Road/Opportunity Way intersection, the east and westbound queues increase and begin to encroach upon other intersections. This is primarily due to the high through traffic volumes (500-750 vehicles in each direction) and the single through lane in each direction. Should the annual 2% growth rate be realized, long range consideration should be given to widening Centerville Road to two (2) through lanes in each direction through the Centerville Road/Opportunity Way intersection. A widened Centerville Road will also allow more green time to be given to the side streets which will help alleviate the delay/queue on those approaches. The James City County Comprehensive Plans lists this section of Centerville Road as one to "watch for widening".`

As noted under existing conditions, the unsignalized Longhill Road/Warhill Trail/Longhill Gate Road intersection, the southbound approach (exiting the park) will operate at LOS F during both peak hours with queues that extend beyond the available storage. Consideration should be given to the installation of a traffic signal at this intersection. The *Longhill Road Corridor Study* also indicated the need for a traffic signal at this location.

Table 4-2: Intersection Level of Service, Delay, and Queue Summary
2030 Background Conditions

Intersection and Type of Control	Movement and Approach	Number of Lane	Turn Lane Storage (ft)	PM Peak Hour				Saturday Peak Hour			
				HCM 2000 Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]	Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]
1. US Route 60 (E-W) at	EB Left	1	225	73.0	E	68	97	69.5	E	38	162
Centerville Road (NB)/	EB Thru	2		36.6	D	366	376	38.4	D	390	418
Retail Entrance (SB)	EB Right[3]	1	425	0.7	A	0	312	0.4	A	0	262
Signalized	*EB Approach*			*22.8*	*C*	--	--	*27.5*	*C*	--	--
	WB Left	2	350	49.8	D	#253	319	61.8	E	#159	200
	WB Thru	2		25.7	C	390	365	20.3	C	348	267
	WB Right	1	175	16.6	B	m0	183	19.8	B	1	182
	WB Approach			*33.8*	*C*	--	--	*30.6*	*C*	--	--
	NB Left	1	225	59.4	E	#295	213	41.2	D	251	213
	NB Thru-Left	1		60.4	E	#302	235	40.9	D	250	335
	NB Right	1		39.2	D	84	175	60.8	E	#383	290
	NB Approach			*51.7*	*D*	--	--	*50.8*	*D*	--	--
	SB Thru-Left	1		78.8	E	#131	133	61.7	E	#136	137
	SB Right	1	100	48.7	D	0	102	47.4	D	0	54
	SB Approach			*69.8*	*E*	--	--	*58.9*	*E*	--	--
	Overall			34.4	C	--	--	36.1	D	--	--
2. US Route 60 (E-W) at	EB Thru	2		16.9	B	365	280	15.5	B	231	409
Route 199 EB Ramps (N-S)	EB Right	1	450	60.6	E	234	124	7.8	A	m12	188
Signalized	*EB Approach*			*31.5*	*C*	--	--	*13.5*	*B*	--	--
	WB Left	1	175	45.5	D	m53	147	53.1	D	m75	142
	WB Thru	2		6.4	A	265	268	13.7	B	m312	244
	WB Approach			*7.7*	*A*	--	--	*16.3*	*B*	--	--
	NB Left	1	150	49.9	D	256	174	37.8	D	210	174
	NB Right	1		37.3	D	104	435	60.0	E	#370	454
	NB Approach			*43.7*	*D*	--	--	*52.6*	*D*	--	--
	Overall			24.0	C	--	--	22.9	C	--	--
3. US Route 60 (E-W) at	EB Thru	2		41.8	D	394	335	35.2	D	#397	507
Route 199 WB Ramps (N-S)	EB Right	1		87.1	F	141	128	46.1	D	m64	218
Signalized	*EB Approach*			*50.7*	*D*	--	--	*37.5*	*D*	--	--
	WB Left	1	350	62.6	E	#246	235	78.2	E	#341	327
	WB Thru	2		13.0	B	180	256	7.8	A	118	327
	WB Approach			*23.6*	*C*	--	--	*28.1*	*C*	--	--
	NB Left	1	525	55.4	E	#482	448	77.4	E	#423	427
	NB Right	1		27.4	C	36	81	35.2	D	46	104
	NB Approach			*50.8*	*D*	--	--	*67.2*	*E*	--	--
	Overall			41.1	D	--	--	39.2	D	--	--
4. Centerville Road (E-W) at	EB Left	2	400	85.0	F	#152	373	51.6	D	#110	425
Opportunity Way (NB)/	EB Thru	1		35.9	D	#632	519	42.9	D	#734	851
Retail Entrance (SB)	EB Right	1	225	19.5	B	0	250	20.3	C	0	250
Signalized	*EB Approach*			*45.8*	*D*	--	--	*43.5*	*D*	--	--
	WB Left	2	250	59.7	E	#246	289	62.7	E	#195	194
	WB Thru	1		35.0	C	#879	587	26.8	C	449	370
	WB Right	1	200	13.9	B	0	225	18.8	B	0	225
	WB Approach			*42.1*	*D*	--	--	*38.6*	*D*	--	--
	NB Thru-Left	1		54.2	D	59	76	40.1	D	81	108
	NB Right	1	700	53.1	D	65	110	55.8	E	221	231
	NB Approach			*53.3*	*D*	--	--	*53.5*	*D*	--	--
	SB Left	1	135	55.6	E	153	139	46.1	D	126	124
	SB Thru-Left	1		55.6	E	155	198	46.2	D	130	176
	SB Right	1	135	62.4	E	160	151	49.1	D	133	154
	SB Approach			*58.0*	*E*	--	--	*47.2*	*D*	--	--
	Overall			46.2	D	--	--	44.3	D	--	--
5. Longhill Road (E-W) at	EB Left	1	200	11.8	B	25	106	10.6	B	16	96
Longhill Road (NB)/	EB Thru-Right	1		0.0	A	0	2	0.0	A	0	0
Warhill Trail (SB)	*EB Approach*			*2.4*	*A*	--	--	*2.1*	*A*	--	--
Unsignalized	WB Left	1	200	9.1	A	3	31	8.7	A	1	28
	WB Thru	1		0.0	A	0	49	0.0	A	0	2
	WB Right	1	200	0.0	A	0	42	0.0	A	0	33
	WB Approach			*0.3*	*A*	--	--	*0.1*	*A*	--	--
	NB Left-Thru-Right	1		48.6	E	30	50	20.8	C	9	45
	NB Approach			*48.6*	*E*	--	--	*20.8*	*C*	--	--
	SB Thru-Left	1		Err	F	Err	672	835.5	F	949	1437
	SB Right	1	215	Err	F	Err	240	835.5	F	949	240
	SB Approach			*Err*	*F*	--	--	*835.5*	*F*	--	--

[1] *Overall intersection LOS and delay reported for signalized intersections and roundabouts only.*

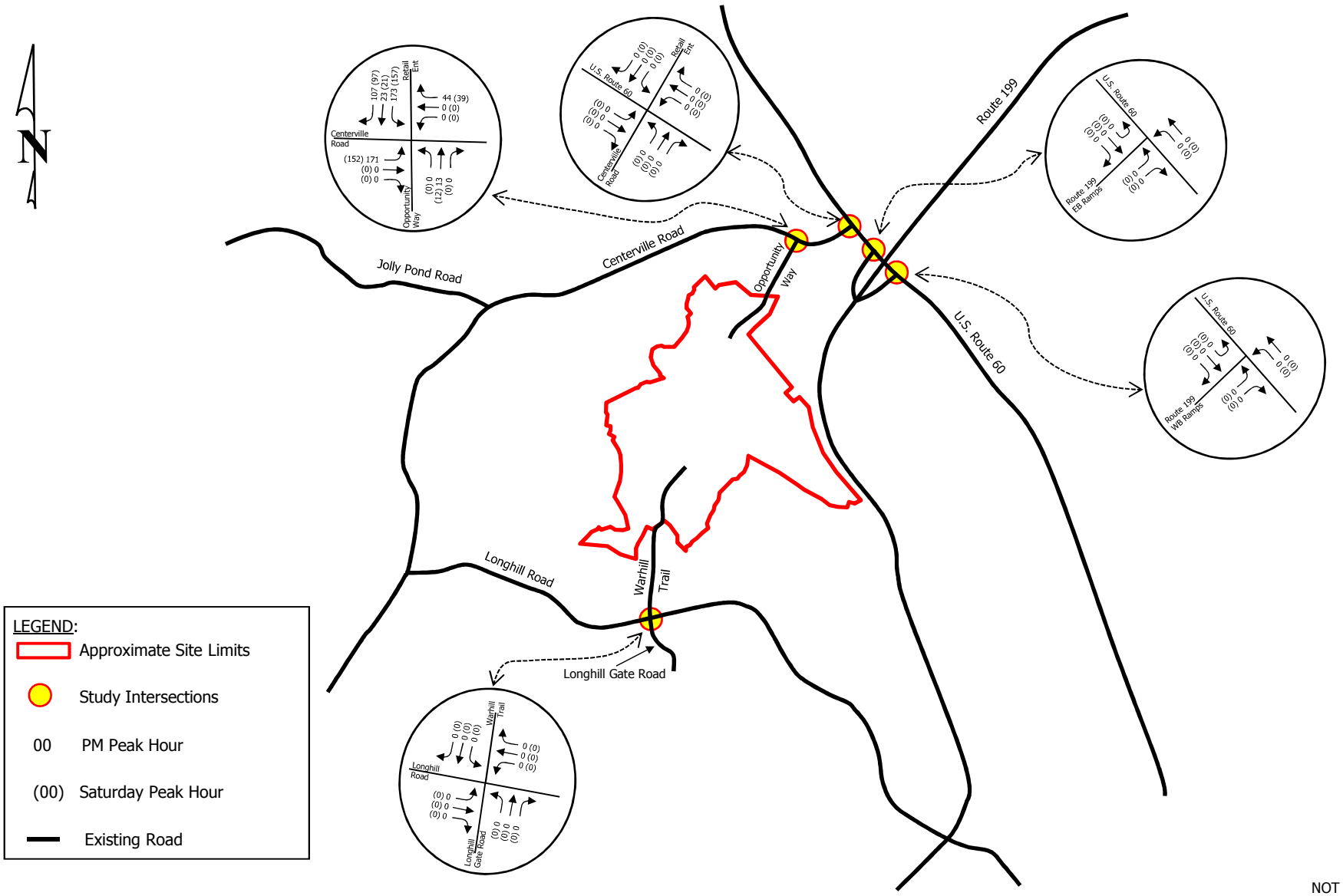
[2] *When more than one lane is present, the highest maximum queue is reported.*

[3] *Eastbound right is channelized and operates under Yield control (not subject to traffic signal control).*

Err LOS/Queue cannot be calculated by Synchro

- 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

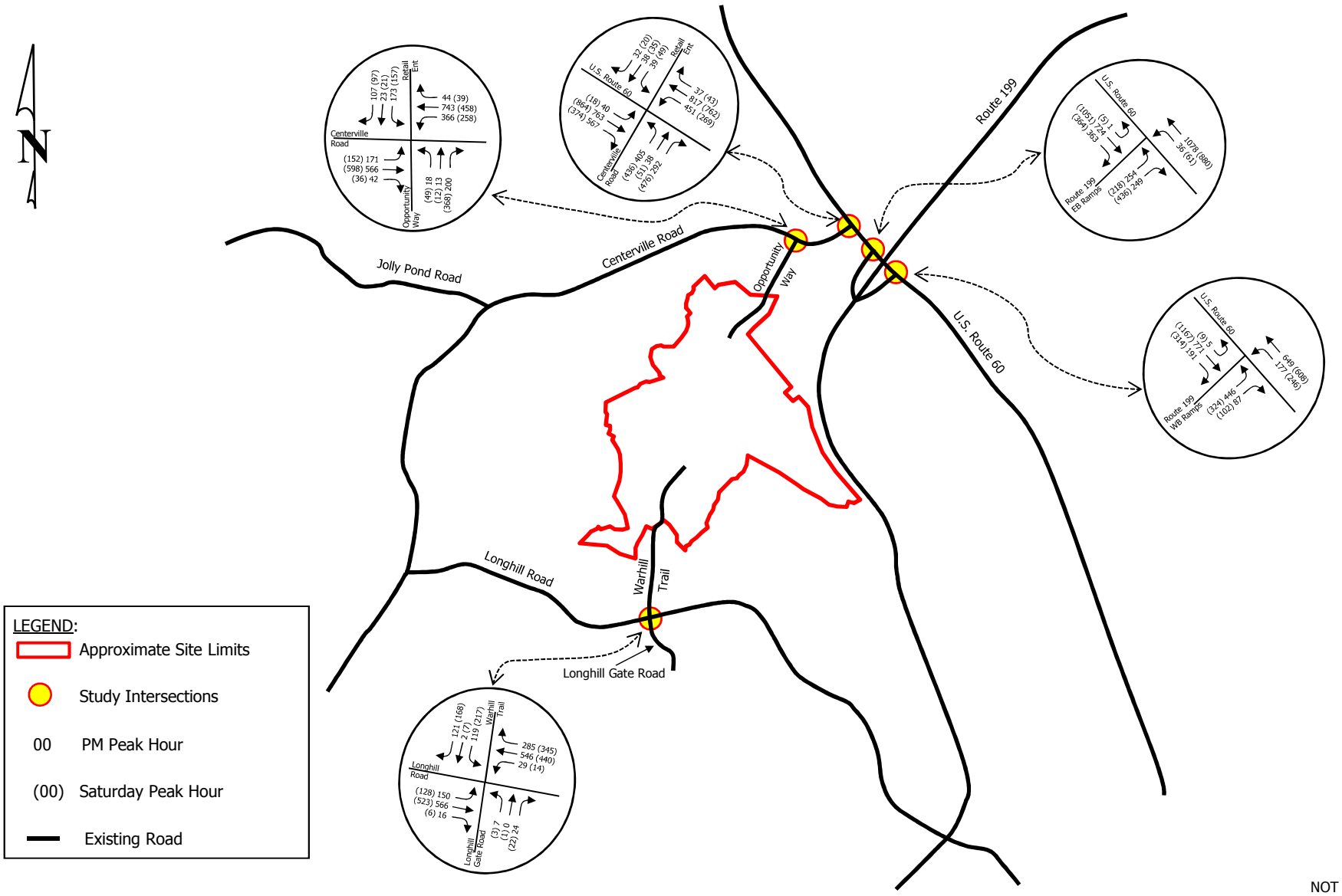
m - Volume for 95th percentile queue is metered by upstream signal.



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Warhill Sports Complex
Lightfoot Marketplace Trips

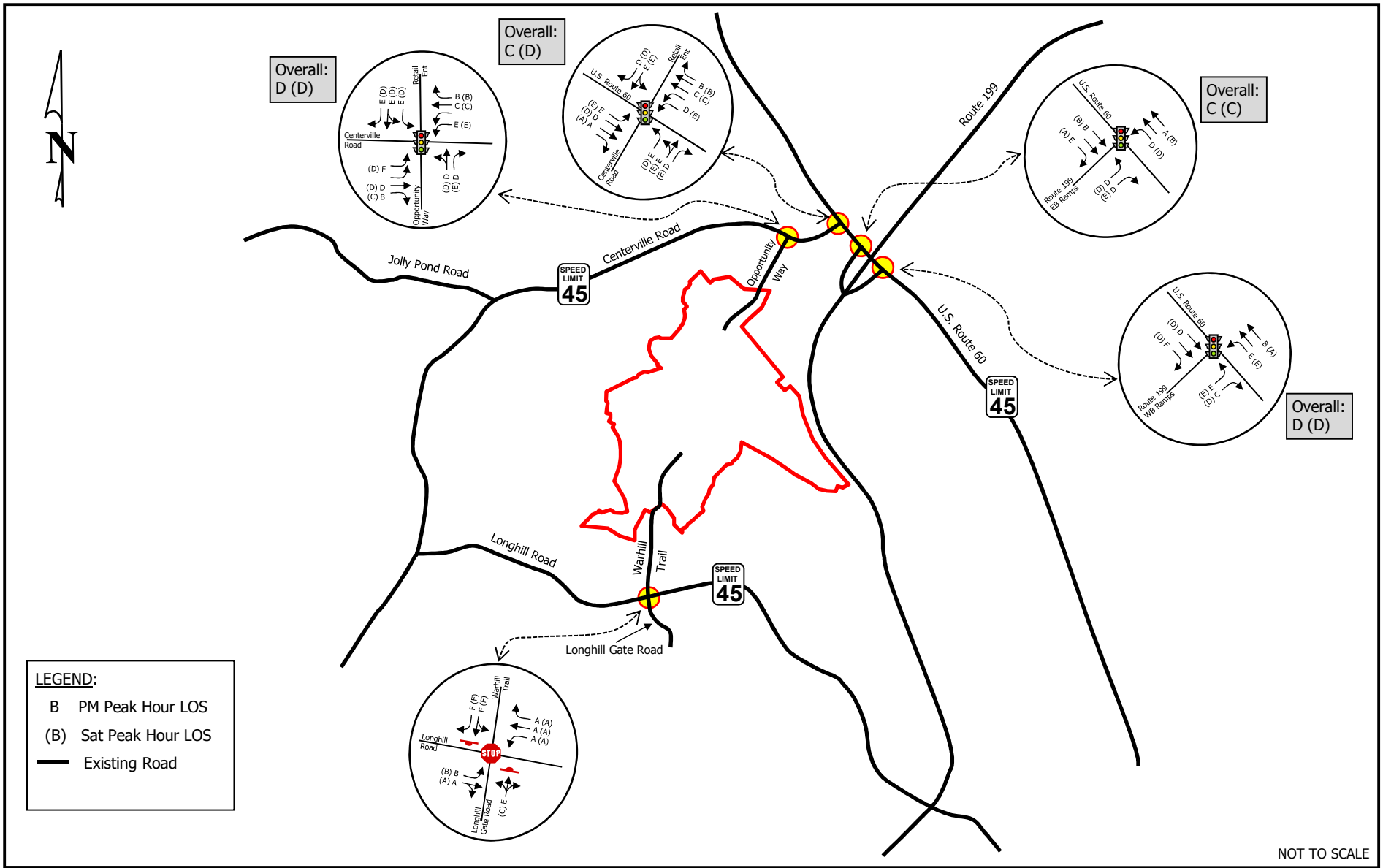
Figure
4-1



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Warhill Sports Complex
2030 Background Volumes
(Existing + Growth + Lightfoot Marketplace Trips)

Figure
4-2



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Warhill Sports Complex
2030 Background Peak Hour Levels of Service

Figure
4-3

5 SITE TRIP GENERATION AND DISTRIBUTION

Site traffic for the proposed development was estimated based on the site characteristics and subsequently distributed to the surrounding roadway network.

For purposes of this analysis, the expansion of the complex was assumed to include the following:

- 14 outdoor athletic fields;
- Public gymnasium with three (3) basketball courts;
- Pool expansion;
- Running complex; and
- WATA transfer station.

There are several other uses shown on the proposed Master Plan for the sports complex that will not be significant generators of traffic (i.e. multi-use trails, open space, etc.) and therefore are not explicitly included in the TIA.

The proposed expansion will utilize the existing access points to the sports complex; no changes in access points or types are proposed with this project. The sports complex is served by two access points; a full movement, signalized access point at the Centerville Road/Opportunity Way intersection (which serves the northern portion of the complex) and a full movement, unsignalized access point at the Longhill Road/Warhill Trail/Longhill Gate Road intersection (which serves the southern portion of the complex).

The northern and southern portions of the complex are connected by an access road that is gated (closed) at all times except for weeknights and weekends during the spring and fall peak periods of use.

5.1 TRIP GENERATION

The site-generated traffic volumes shown in Table 5-1 was estimated using the 9th edition of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*.

Table 5-1: Trip Generation Summary

				WEEKDAY PM PEAK HOUR				SATURDAY Midday Peak Hour			
LAND USE	ITE CODE	AMOUNT	UNITS	ADT	IN	OUT	TOTAL	ADT	IN	OUT	TOTAL
Soccer Complex[1]	488	14	Fields	999	166	82	248	1,644	204	221	425
Gymnasium[2]		3	Courts	214	36	17	53	352	44	47	91
Pool Addition[3]		1	Pool	143	23	12	35	235	29	32	61
Running Complex[4]		3,000	S.F.	40	20	0	20	100	50	0	50
WATA Transfer Station[5]		1	Station	298	13	13	26	298	13	13	26
Total Proposed Trips				**1,694**	**258**	**124**	**382**	**2,629**	**340**	**313**	**653**

Notes:
(1) Trip generation source: Institute of Transportation Engineers' Trip Generation Manual 9th Edition (2012). All fields shown on Master Plan were assumed to be soccer fields for trip generation purposes only.
(2) Public gymnasium would include 3 basketball courts with minimal seating. For trip generation purposes, the 3 courts were assumed to be the equivalent of 3 soccer fields (Land Use Code 488) as ITE has no data for a stand alone gymnasium.
(3) Pool expansion would include a 25 meter competitive pool. For trip generation purposes, the pool was assumed to be the equivalent of 2 soccer fields (ITE Land Use Code 488) as ITE has no data for a stand alone pool facility.
(4) Running complex trips based on data provided by County. Weekday ADT/PM peak hour assumed to be for local running club workouts (20 attendees). Saturday peak hour assumed to be for high school home meet (96 athletes on 2 buses plus 48 other attendees). Other events may draw more traffic but on-site parking may limit other uses during those events.
(5) WATA transfer station trip generation based on data provided by WATA. Station will be served by 4 lines with each line serviced at most twice per hour and 74 times per day which equates to 16 hourly trips (8 in and 8 out) and 148 ADT. Transfer station includes 15 parking spaces which were assumed to turn over every 3 hours (i.e. 33% every hour). Parking space ADT = 5 turnovers/space/day = 5 turnovers * 2 trips (1 in and 1 out) * 15 spaces = 150 ADT.

As shown on Table 5-1, when complete, the expansion of the sports complex is estimated to generate an additional 382 weekday PM peak hour trips and 653 Saturday peak hour trips; this translates into 1,694 daily weekday trips and 2,629 daily Saturday trips.

5.2 Trip Distributions

The distribution of trips generated by the expansion was based on the existing travel patterns, the nature of the use, and local knowledge. It was assumed that weekday trips will be more local in nature while Saturday trips will be more regional in nature, due in part to out of town trips coming in for sports tournaments. Therefore, both a local and regional trip distribution was developed.

The following weekday/local directional distributions were assumed:

- To/From the West on U.S. Route 60 – 15%
- To/From the East on U.S. Route 60 – 25%
- To/From the South on Route 199 – 20%
- To/From the North on Route 199 – 15%
- To/From the South on Centerville Road – 15%
- Local traffic (south of Longhill Road) – 10%

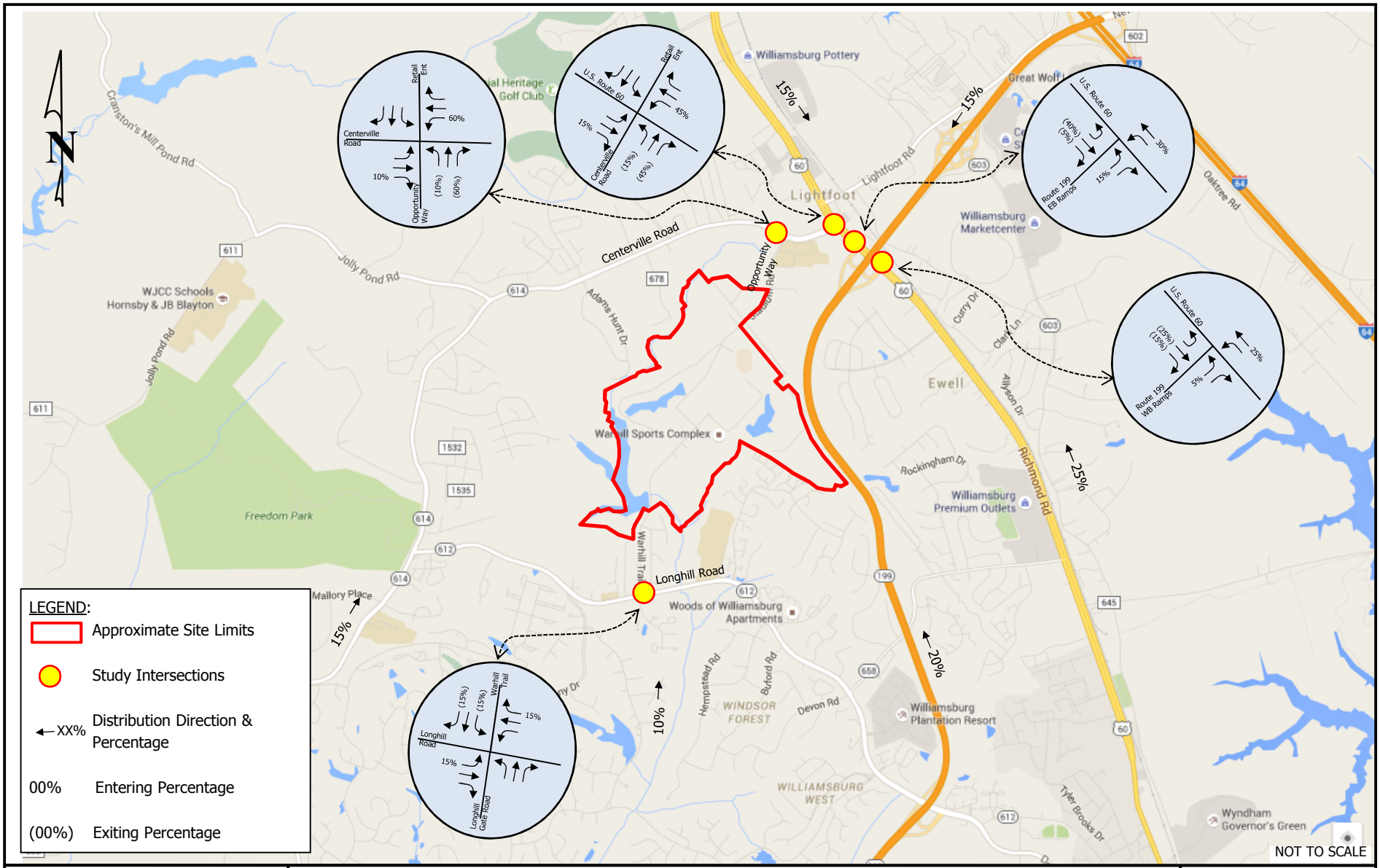
The following weekend/regional directional distributions were assumed:

- To/From the West on U.S. Route 60 – 10%
- To/From the East on U.S. Route 60 – 20%
- To/From the South on Route 199 – 15%
- To/From the North on Route 199 (from I-64) – 50%
- To/From the South on Centerville Road – 5%

The directional distributions were then applied to the study intersections and site entrances as shown on Figure 5-1 (local) and Figure 5-2 (regional).

5.3 Site Trip Assignments

The trip distribution percentages for the site generated trips were applied to the trip generation estimates shown in Table 5-1 to assign the trips to the surrounding roadway network. The resulting site generated trips are shown in Figure 5-3.



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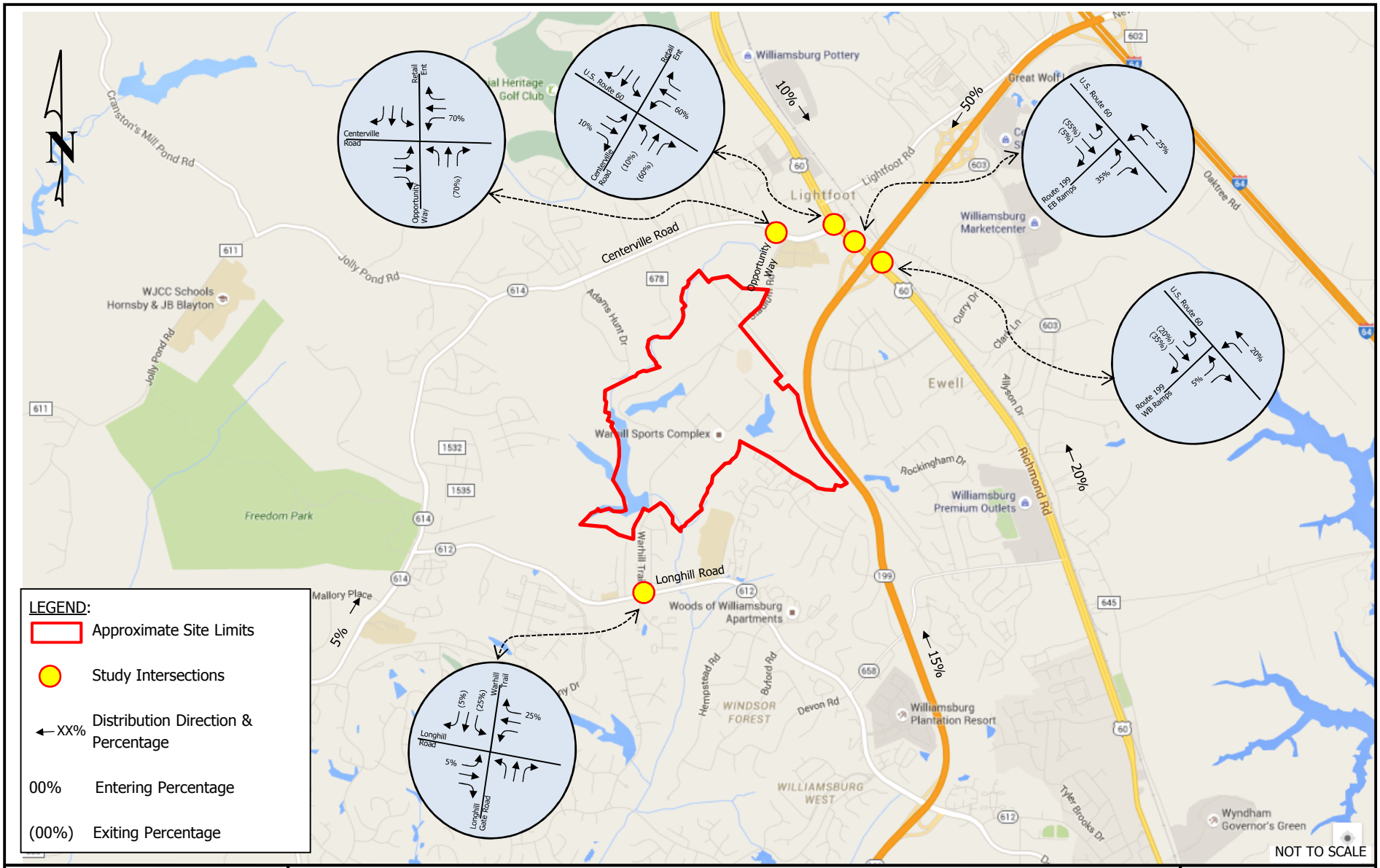
Warhill Sports Complex
Site Trip Distributions – Local (PM)

Figure
5-1



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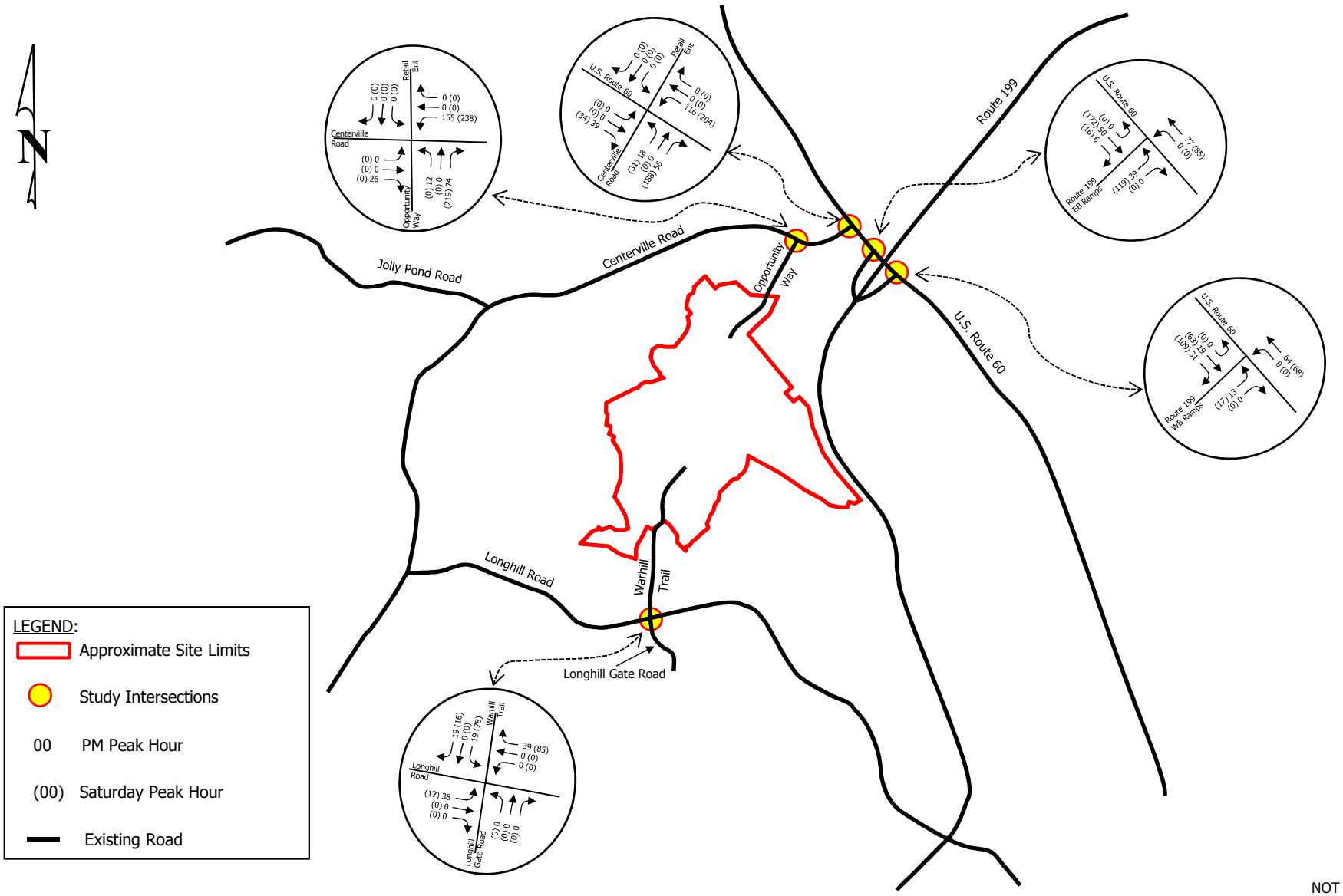
Warhill Sports Complex
Site Trip Distributions – Regional (Saturday)

Figure
5-2



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Warhill Sports Complex
Site Generated Trips

Figure
5-3

6 ANALYSIS OF 2030 CONDITIONS WITH DEVELOPMENT

To complete the analysis of the 2030 total future conditions (with the proposed expansion), the estimated site trips were added to the background 2030 volumes. The projected volumes were then used to complete the capacity analysis.

6.1 2030 TOTAL TRAFFIC VOLUMES

To generate the 2030 total future traffic volumes, the site trips shown in Figure 5-3 were added to the background 2030 traffic volumes shown in Figure 4-2. The resulting 2030 total future volumes are shown in Figure 6-1.

6.2 CAPACITY ANALYSES

Table 6-1 summarizes the 2030 total future intersection LOS, delay, 95th percentile (Synchro) and maximum (SimTraffic) queue lengths based on the 2030 total future peak hour traffic volumes shown on Figure 6-1, the existing lane geometry (Figure 3-2), and optimized traffic signal timings. The 2030 total future PM and Saturday peak hour intersection LOS is shown on Figure 6-2. The corresponding SYNCHRO worksheets are included in Appendix F.

As indicated in Table 6-1, under 2030 total future conditions, each of the study intersections will operate at comparable LOS and queueing to background conditions. The 95th percentile and maximum queues will increase slightly with the addition of site traffic.

At the unsignalized Longhill Road/Warhill Trail/Longhill Gate Road intersection, the southbound approach (exiting the park) will continue to operate at LOS F during both peak hours with queues that extend beyond the available storage. Consideration should be given to the installation of a traffic signal at this intersection.

With signalization, the intersection will operate at an acceptable LOS. However, the southbound queue will extend beyond the available storage. An extension of the southbound right turn lane should be considered. Further, with signalization, the potential realignment of the residential driveway just west of the intersection to align with Blue Bill Run should be considered.

Should a traffic signal not be warranted at the intersection, consideration should be given to alternative traffic control in the form of manual traffic control (police officer or other certified personnel) in the peak hours.

Currently, traffic utilizes both entrances proportionally to enter the Warhill Sports Complex. However, exiting traffic utilizes the northern entrance (Opportunity Way) at a higher rate than the southern entrance (Warhill Trail) due to the operations at the Warhill Road intersection. Should a traffic signal or manual traffic control be implemented, it is likely that traffic will shift to the southern entrance which in turn will help the capacity/queueing at the northern intersections.

6.3 INTERNAL ACCESS ROAD

The internal access road is gated and currently open only on weeknights and weekends in the Spring/Fall. The access road will provide a link between the northern and southern portions and consideration should be given to opening the road on a more permanent basis to allow traffic to use either entrance. However, the benefit of opening the road will only be realized in the event of a traffic signal or manual control at the Warhill Road entrance.

Table 6-1: Intersection Level of Service, Delay, and Queue Summary
2030 Total Future Conditions

Intersection and Type of Control	Movement and Approach	Number of Lane	Turn Lane Storage (ft)	PM Peak Hour				Saturday Peak Hour			
				HCM 2000 Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]	Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]
1. US Route 60 (E-W) at	EB Left	1	225	73.0	E	68	194	69.5	E	38	249
Centerville Road (NB)/	EB Thru	2		43.2	D	#384	728	68.5	E	#468	756
Retail Entrance (SB)	EB Right[3]	1	425	0.8	A	0	398	0.4	A	0	450
Signalized	*EB Approach*			*25.8*	*C*	--	--	*47.0*	*D*	--	--
	WB Left	2	350	48.2	D	#312	315	98.6	F	#288	361
	WB Thru	2		25.1	C	389	324	22.4	C	271	454
	WB Right	1	175	16.6	B	m0	199	22.4	C	m0	112
	WB Approach			*34.1*	*C*	--	--	*50.5*	*D*	--	--
	NB Left	1	225	68.0	E	#3217	240	34.1	C	254	220
	NB Thru-Left	1		68.0	E	#331	379	34.1	C	258	235
	NB Right	1		40.1	D	100	228	105.4	F	#621	482
	NB Approach			*56.0*	*E*	--	--	*74.2*	*E*	--	--
	SB Thru-Left	1		70.5	E	#143	142	107.4	F	#160	154
	SB Right	1	100	48.3	D	0	98	49.3	D	0	79
	SB Approach			*63.9*	*E*	--	--	*96.1*	*F*	--	--
	Overall			36.6	D	--	--	57.8	E	--	--
2. US Route 60 (E-W) at	EB Thru	2		20.3	C	391	292	15.5	B	m186	405
Route 199 EB Ramps (N-S)	EB Right	1	450	78.3	E	m220	143	12.7	B	m186	166
Signalized	*EB Approach*			*39.0*	*D*	--	--	*14.8*	*B*	--	--
	WB Left	1	175	44.3	D	m54	138	63.5	E	m#85	182
	WB Thru	2		7.9	A	306	333	14.9	B	m340	332
	WB Approach			*9.0*	*A*	--	--	*17.8*	*B*	--	--
	NB Left	1	150	49.1	D	287	174	47.4	D	330	175
	NB Right	1		36.1	D	130	458	58.3	E	#387	617
	NB Approach			*43.1*	*D*	--	--	*53.5*	*D*	--	--
	Overall			27.4	C	--	--	24.8	C	--	--
3. US Route 60 (E-W) at	EB Thru	2		39.8	D	404	357	35.6	D	412	478
Route 199 WB Ramps (N-S)	EB Right	1		86.3	F	150	142	49.4	D	m80	248
Signalized	*EB Approach*			*49.9*	*D*	--	--	*39.1*	*D*	--	--
	WB Left	1	350	67.0	E	#258	263	111.4	F	#364	345
	WB Thru	2		13.9	B	206	308	8.1	A	128	491
	WB Approach			*24.5*	*C*	--	--	*35.7*	*D*	--	--
	NB Left	1	525	54.6	D	#494	475	89.4	F	#464	448
	NB Right	1		26.8	C	36	96	35.1	D	47	237
	NB Approach			*50.2*	*D*	--	--	*76.9*	*E*	--	--
	Overall			40.7	D	--	--	43.6	D	--	--
4. Centerville Road (E-W) at	EB Left	2	400	83.2	F	#162	424	70.8	E	119	425
Opportunity Way (NB)/	EB Thru	1		48.9	D	#760	741	86.2	F	#893	1627
Retail Entrance (SB)	EB Right	1	225	24.1	C	0	250	32.8	C	0	250
Signalized	*EB Approach*			*54.1*	*D*	--	--	*80.7*	*F*	--	--
	WB Left	2	250	61.5	E	#374	456	97.2	F	#391	533
	WB Thru	1		34.0	C	#893	670	35.1	D	502	446
	WB Right	1	200	14.3	B	0	225	25.2	C	0	225
	WB Approach			*44.3*	*D*	--	--	*65.7*	*E*	--	--
	NB Thru-Left	1		58.7	E	80	98	45.5	D	96	393
	NB Right	1	700	57.8	E	82	194	125.6	F	#667	624
	NB Approach			*61.7*	*E*	--	--	*70.5*	*E*	--	--
	SB Left	1	135	57.9	E	169	155	118.0	F	156	153
	SB Thru-Left	1		61.6	E	171	207	70.9	E	162	204
	SB Right	1	135	69.5	E	#187	158	79.4	E	164	160
	SB Approach			*64.4*	*E*	--	--	*73.8*	*E*	--	--
	Overall			51.0	D	--	--	83.4	F	--	--
5. Longhill Road (E-W) at	EB Left	1	200	12.8	B	35	151	11.3	B	21	119
Longhill Road (NB)/	EB Thru-Right	1		0.0	A	0	2	0.0	A	0	0
Warhill Trail (SB)	*EB Approach*			*3.1*	*A*	--	--	*2.4*	*A*	--	--
Unsignalized	WB Left	1	200	9.1	A	3	31	8.7	A	1	27
	WB Thru	1		0.0	A	0	4	0.0	A	0	0
	WB Right	1	200	0.0	A	0	53	0.0	A	0	52
	WB Approach			*0.3*	*A*	--	--	*0.1*	*A*	--	--
	NB Left-Thru-Right	1		69.0	F	40	80	22.3	C	10	44
	NB Approach			*69.0*	*F*	--	--	*22.3*	*C*	--	--
	SB Thru-Left	1		Err	F	Err	1452	961.2	F	989	1520
	SB Right	1	215	Err	F	Err	240	961.2	F	989	240
	SB Approach			*Err*	*F*	--	--	*961.2*	*F*	--	--

[1] *Overall intersection LOS and delay reported for signalized intersections and roundabouts only.*

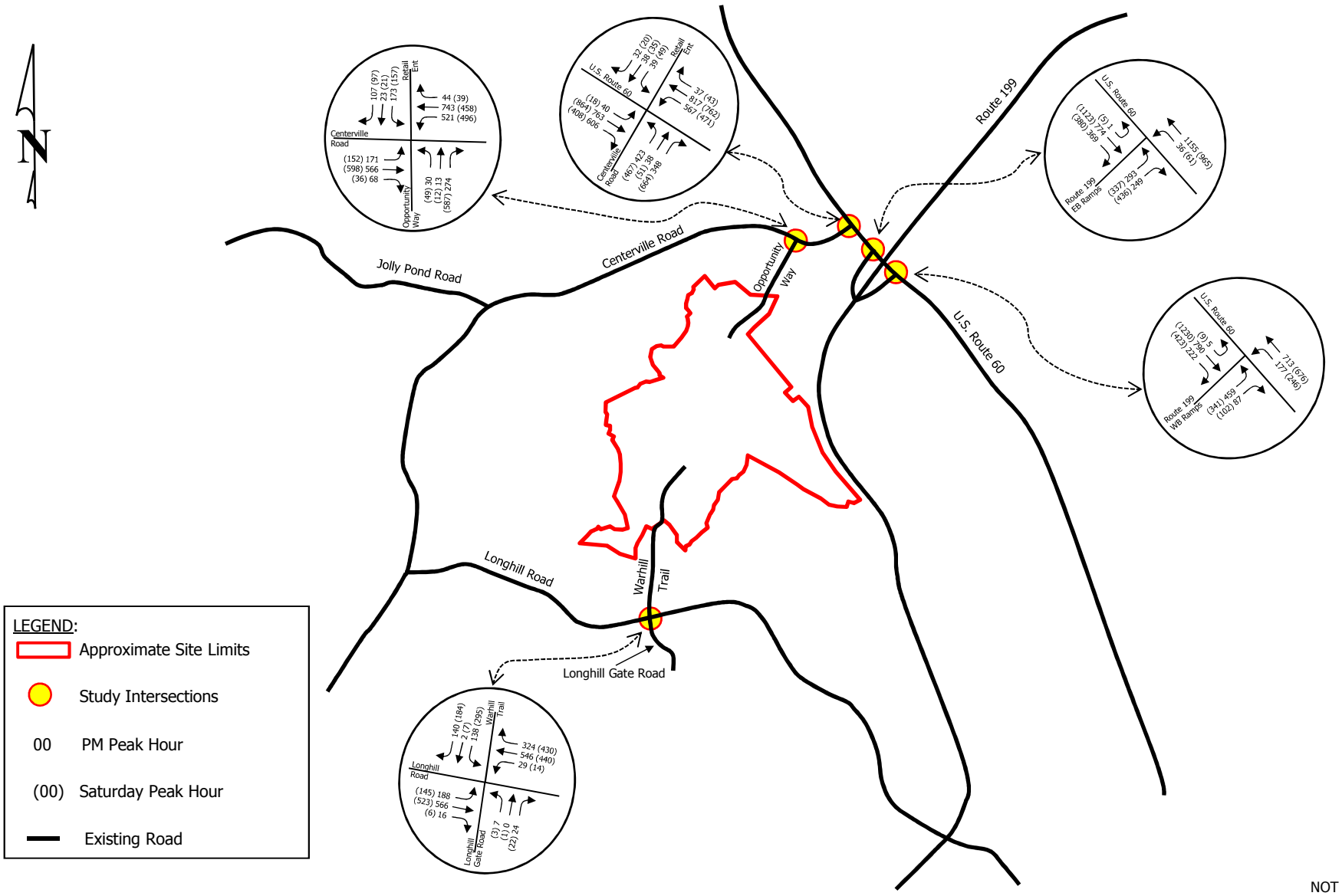
[2] *When more than one lane is present, the highest maximum queue is reported.*

[3] *Eastbound right is channelized and operates under Yield control (not subject to traffic signal control).*

Err LOS/Queue cannot be calculated by Synchro

- 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

m - Volume for 95th percentile queue is metered by upstream signal.



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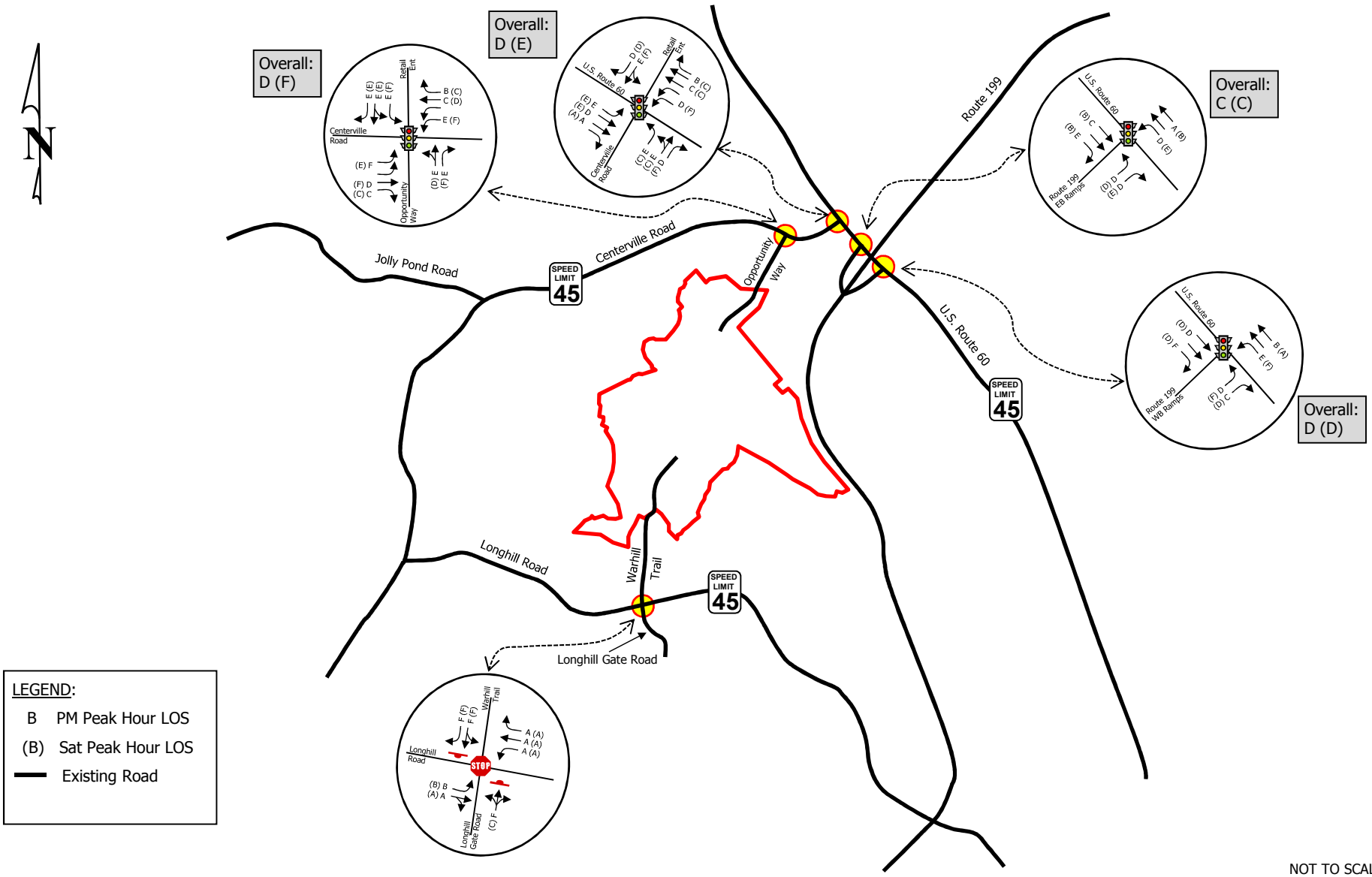
Warhill Sports Complex
2030 Total Future Volumes
(Existing + Growth + Lightfoot Marketplace Trips + Site Trips)

Figure
6-1



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YOUR VISION ACHIEVED THROUGH OURS.

Warhill Sports Complex
2030 Total Future Peak Hour Levels of Service

Figure
6-2

7 2036 BACKGROUND CONDITIONS AND ANALYSIS

For planning purposes only, a buildout plus 6 years (2036) analysis was completed. The background 2036 volumes were analyzed assuming existing intersection geometry and traffic controls in conjunction with projected background traffic volumes. Background traffic volumes are comprised of the existing traffic counts, trips from other developments in the area, and background traffic growth.

7.1 2036 BACKGROUND TRAFFIC VOLUMES

The growth rates discussed above was compounded annually for the 20-year period and applied to the study roadways. The growth was added to the existing traffic volumes (Figure 3-1) and the Lightfoot Marketplace Trips (Figure 4-1) and the resulting 2036 background volumes are shown on Figure 7-1.

7.2 2036 BACKGROUND TRAFFIC VOLUME CAPACITY ANALYSIS

Table 7-1 summarizes the 2036 background intersection LOS, delay, 95th percentile (Synchro) and maximum (SimTraffic) queue lengths based on the 2036 background peak hour traffic volumes shown on Figure 7-1, the existing lane geometry (Figure 3-2), and optimized traffic signal timings. The 2036 background PM and Saturday peak hour intersection LOS is shown on Figure 7-2. The corresponding SYNCHRO worksheets are included in Appendix G.

As indicated in Table 7-1, under 2036 background conditions, the growth in existing traffic will cause an increase in delay and queueing at the study intersections. Each signalized intersection will have multiple lanes/approaches that operate at LOS E or F during at least one of the peak hours.

As indicated under 2030 conditions, should the 2% annual growth rate be realized, long range consideration should be given to widening Centerville Road to two (2) through lanes in each direction through the Centerville Road/Opportunity Way intersection.

The unsignalized Longhill Road/Warhill Trail/Longhill Gate Road intersection will continue to deteriorate.

Table 7-1: Intersection Level of Service, Delay, and Queue Summary
2036 Background Conditions

Intersection and Type of Control	Movement and Approach	Number of Lane	Turn Lane Storage (ft)	PM Peak Hour				Saturday Peak Hour			
				HCM 2000 Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]	Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]
1. US Route 60 (E-W) at	EB Left	1	225	73.0	E	68	179	69.5	E	38	185
Centerville Road (NB)/	EB Thru	2		39.7	D	#425	492	42.5	D	408	455
Retail Entrance (SB)	EB Right[3]	1	425	0.8	A	0	367	0.4	A	0	275
Signalized	*EB Approach*			*24.5*	*C*	--	--	*30.3*	*C*	--	--
	WB Left	2	350	49.4	D	#266	330	81.1	F	#188	240
	WB Thru	2		24.6	C	420	330	20.9	C	367	279
	WB Right	1	175	16.6	B	m0	183	20.8	C	m12	155
	WB Approach			*33.0*	*C*	--	--	*36.0*	*D*	--	--
	NB Left	1	225	64.0	E	#322	238	37.8	D	258	200
	NB Thru-Left	1		64.4	E	#327	272	38.0	D	264	219
	NB Right	1		39.2	D	90	251	67.9	E	#460	324
	NB Approach			*54.2*	*D*	--	--	*52.8*	*D*	--	--
	SB Thru-Left	1		86.3	F	#131	125	80.3	F	#160	166
	SB Right	1	100	49.0	D	0	68	48.5	D	0	98
	SB Approach			*75.2*	*E*	--	--	*74.1*	*E*	--	--
	Overall			35.4	D	--	--	39.8	D	--	--
2. US Route 60 (E-W) at	EB Thru	2		19.3	B	390	287	17.7	B	m258	453
Route 199 EB Ramps (N-S)	EB Right	1	450	74.2	E	248	142	10.8	B	m9	302
Signalized	*EB Approach*			*37.6*	*D*	--	--	*15.9*	*B*	--	--
	WB Left	1	175	47.8	D	m55	126	75.8	E	m#91	182
	WB Thru	2		7.4	A	310	305	16.0	B	m328	258
	WB Approach			*8.6*	*A*	--	--	*19.9*	*B*	--	--
	NB Left	1	150	49.6	D	269	174	35.4	D	221	174
	NB Right	1		36.9	D	114	408	62.0	E	#432	475
	NB Approach			*43.3*	*D*	--	--	*53.1*	*D*	--	--
	Overall			26.8	C	--	--	25.2	C	--	--
3. US Route 60 (E-W) at	EB Thru	2		44.1	D	417	377	38.6	D	#594	564
Route 199 WB Ramps (N-S)	EB Right	1		84.2	F	131	150	43.3	D	m65	247
Signalized	*EB Approach*			*52.0*	*D*	--	--	*39.6*	*D*	--	--
	WB Left	1	350	69.4	E	#267	246	108.7	F	#380	348
	WB Thru	2		14.0	B	193	249	8.3	A	126	293
	WB Approach			*25.8*	*C*	--	--	*37.2*	*D*	--	--
	NB Left	1	525	57.9	E	#529	472	83.2	F	#458	465
	NB Right	1		26.6	C	37	92	34.6	C	47	234
	NB Approach			*52.8*	*D*	--	--	*71.5*	*E*	--	--
	Overall			42.9	D	--	--	43.8	D	--	--
4. Centerville Road (E-W) at	EB Left	2	400	109.9	F	#168	396	52.8	D	#110	425
Opportunity Way (NB)/	EB Thru	1		39.0	D	#797	623	65.5	E	#868	1387
Retail Entrance (SB)	EB Right	1	225	18.9	B	0	250	20.7	C	0	250
Signalized	*EB Approach*			*52.3*	*D*	--	--	*61.4*	*E*	--	--
	WB Left	2	250	66.7	E	#265	472	65.4	E	#195	173
	WB Thru	1		42.1	D	#1074	789	29.9	C	#539	431
	WB Right	1	200	13.1	B	0	225	19.1	B	0	205
	WB Approach			*48.3*	*D*	--	--	*40.7*	*D*	--	--
	NB Thru-Left	1		59.6	E	63	84	39.9	D	81	95
	NB Right	1	700	58.3	E	66	120	57.6	E	236	225
	NB Approach			*61.9*	*E*	--	--	*55.1*	*E*	--	--
	SB Left	1	135	58.5	E	166	146	47.0	D	126	138
	SB Thru-Left	1		62.2	E	168	198	47.1	D	130	180
	SB Right	1	135	70.4	E	#180	157	50.3	D	133	153
	SB Approach			*65.0*	*E*	--	--	*48.2*	*D*	--	--
	Overall			52.4	D	--	--	51.6	D	--	--
5. Longhill Road (E-W) at	EB Left	1	200	12.1	B	26	115	10.7	B	16	118
Longhill Road (NB)/	EB Thru-Right	1		0.0	A	0	2	0.0	A	0	0
Warhill Trail (SB)	*EB Approach*			*2.3*	*A*	--	--	*1.9*	*A*	--	--
Unsignalized	WB Left	1	200	9.4	A	3	39	8.9	A	1	28
	WB Thru	1		0.0	A	0	0	0.0	A	0	2
	WB Right	1	200	0.0	A	0	49	0.0	A	0	54
	WB Approach			*0.3*	*A*	--	--	*0.1*	*A*	--	--
	NB Left-Thru-Right	1		64.5	F	38	56	23.7	C	11	50
	NB Approach			*64.5*	*F*	--	--	*23.7*	*C*	--	--
	SB Thru-Left	1		Err	F	Err	962	Err	F	Err	1523
	SB Right	1	215	Err	F	Err	240	Err	F	Err	240
	SB Approach			*Err*	*F*	--	--	*Err*	*F*	--	--

[1] *Overall intersection LOS and delay reported for signalized intersections and roundabouts only.*

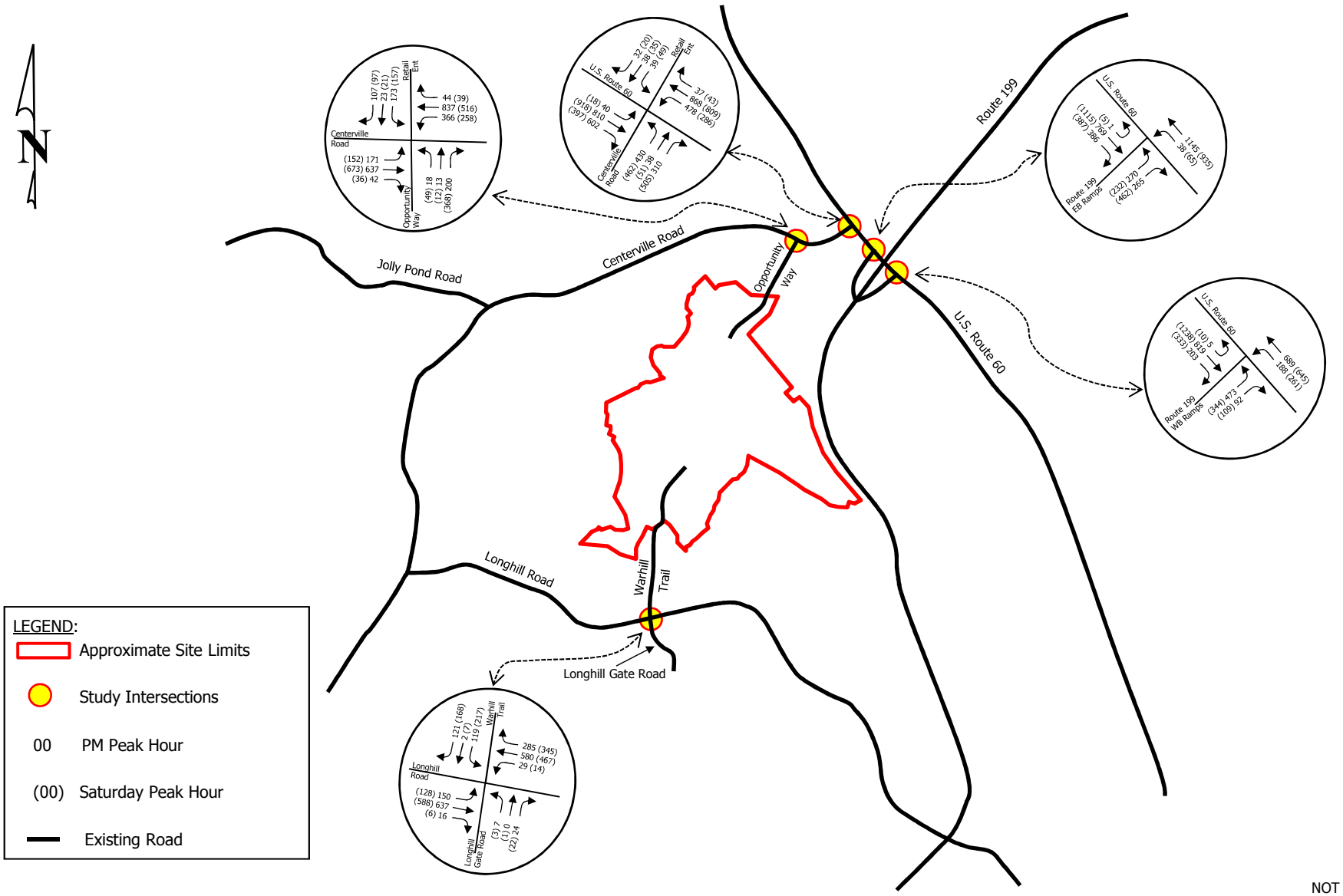
[2] *When more than one lane is present, the highest maximum queue is reported.*

[3] *Eastbound right is channelized and operates under Yield control (not subject to traffic signal control).*

Err LOS/Queue cannot be calculated by Synchro

- 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

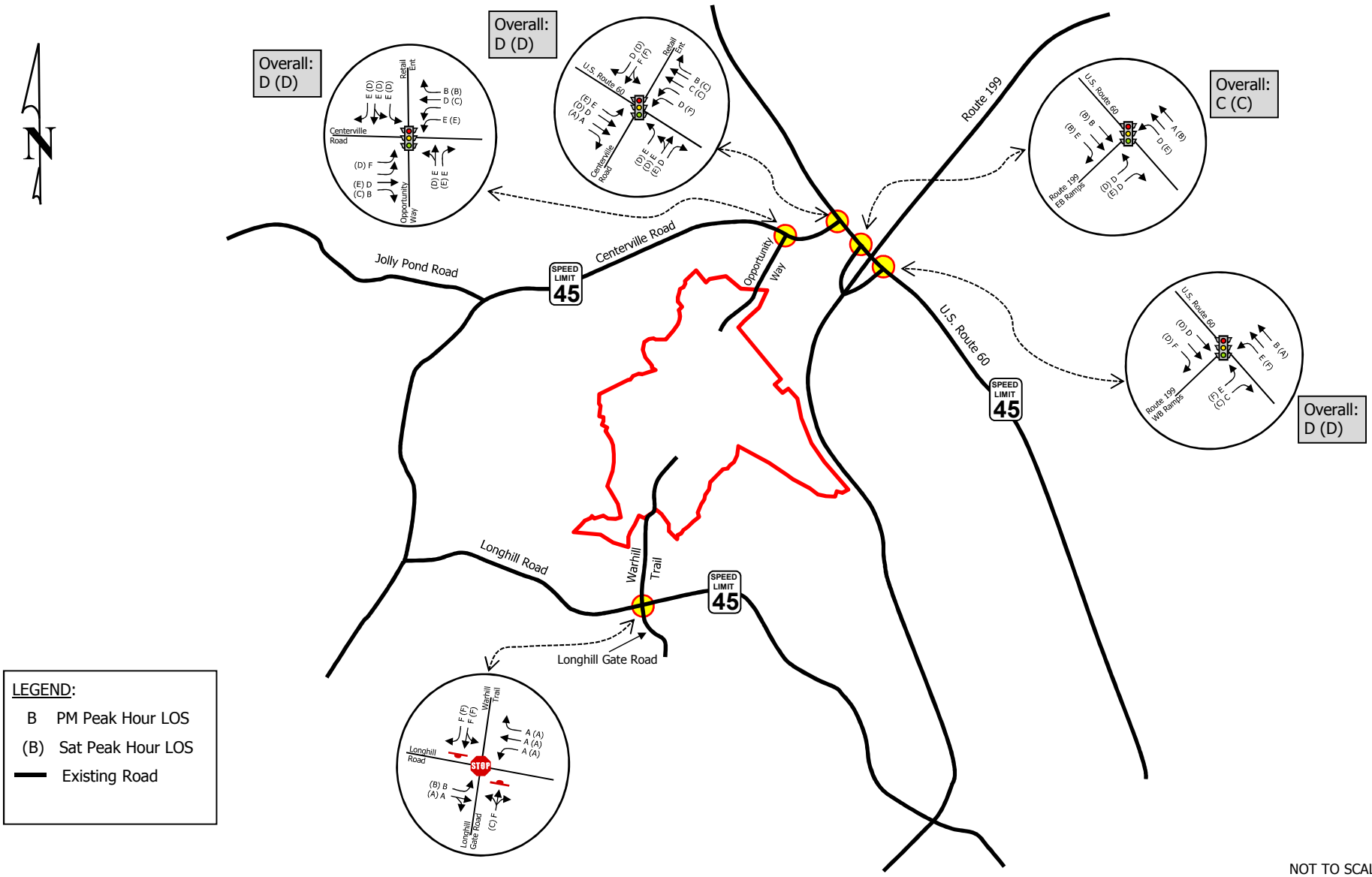
m - Volume for 95th percentile queue is metered by upstream signal.



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Warhill Sports Complex
2036 Background Volumes
(Existing + Growth + Lightfoot Marketplace Trips)

Figure
7-1



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Warhill Sports Complex
2036 Background Peak Hour Levels of Service

Figure
7-2

8 ANALYSIS OF 2036 CONDITIONS WITH DEVELOPMENT

To complete the analysis of the 2036 total future conditions (with the proposed expansion), the estimated site trips were added to the background 2036 volumes. The projected volumes were then used to complete the capacity analysis.

8.1 2036 TOTAL TRAFFIC VOLUMES

To generate the 2036 total future traffic volumes, the site trips shown in Figure 5-3 were added to the background 2036 traffic volumes shown in Figure 7-1. The resulting 2036 total future volumes are shown in Figure 8-1.

8.2 CAPACITY ANALYSES

Table 8-1 summarizes the 2036 total future intersection LOS, delay, 95th percentile (Synchro) and maximum (SimTraffic) queue lengths based on the 2036 future peak hour traffic volumes shown on Figure 8-1, the existing lane geometry (Figure 3-2), and optimized traffic signal timings. The 2036 future PM and Saturday peak hour intersection LOS is shown on Figure 8-2. The corresponding SYNCHRO worksheets are included in Appendix H.

As indicated in Table 8-1, under 2036 future conditions, each of the study intersections will operate at comparable LOS and queueing to background conditions. The 95th percentile and maximum queues will increase slightly with the addition of site traffic.

At the unsignalized Longhill Road/Warhill Trail/Longhill Gate Road intersection, the southbound approach (exiting the park) will continue to operate at LOS F during both peak hours with queues that extend beyond the available storage. Consideration should be given to the installation of a traffic signal at this intersection.

With signalization, the intersection will operate at acceptable LOS. However, the southbound queue will extend beyond the available storage; an extension of the southbound right turn lane should be considered. Further, with signalization, the potential realignment of the residential driveway just west of the intersection to align with Blue Bill Run should be considered.

Should a traffic signal not be warranted at the intersection, consideration should be given to alternative traffic control in the form of manual traffic control (police officer or other certified personnel) in the peak hours.

Table 8-1: Intersection Level of Service, Delay, and Queue Summary
2036 Total Future Conditions

Intersection and Type of Control	Movement and Approach	Number of Lane	Turn Lane Storage (ft)	PM Peak Hour				Saturday Peak Hour			
				HCM 2000 Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]	Delay [1] (sec/veh)	LOS [1]	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft) [2]
1. US Route 60 (E-W) at	EB Left	1	225	73.0	E	68	198	69.5	E	38	226
Centerville Road (NB)/	EB Thru	2		46.8	D	#425	440	73.5	E	#500	1166
Retail Entrance (SB)	EB Right[3]	1	425	0.9	A	0	401	0.4	A	0	450
Signalized	*EB Approach*			*27.8*	*C*	--	--	*50.4*	*D*	--	--
	WB Left	2	350	52.6	D	#337	331	116.5	F	#305	375
	WB Thru	2		23.9	C	412	369	19.0	B	274	664
	WB Right	1	175	16.4	B	m0	185	21.8	C	m0	107
	WB Approach			*35.1*	*D*	--	--	*54.7*	*D*	--	--
	NB Left	1	225	71.8	E	#353	242	35.9	D	272	231
	NB Thru-Left	1		71.3	E	#354	395	35.9	D	275	376
	NB Right	1		41.0	D	137	240	140.5	F	#674	893
	NB Approach			*58.4*	*E*	--	--	*94.5*	*F*	--	--
	SB Thru-Left	1		86.3	F	#155	145	107.4	F	#160	180
	SB Right	1	100	49.0	D	0	79	49.3	D	0	79
	SB Approach			*75.2*	*E*	--	--	*96.1*	*F*	--	--
	Overall			38.5	D	--	--	66.5	E	--	--
2. US Route 60 (E-W) at	EB Thru	2		20.8	C	414	334	15.0	B	m209	444
Route 199 EB Ramps (N-S)	EB Right	1	450	78.6	E	m214	169	8.0	A	m1	226
Signalized	*EB Approach*			*39.5*	*D*	--	--	*13.3*	*B*	--	--
	WB Left	1	175	51.8	D	m55	164	71.0	E	m#100	189
	WB Thru	2		9.0	A	326	376	18.5	B	m353	320
	WB Approach			*10.2*	*B*	--	--	*21.6*	*C*	--	--
	NB Left	1	150	49.3	D	304	174	45.3	D	#365	175
	NB Right	1		35.7	D	141	499	71.1	E	#483	653
	NB Approach			*43.1*	*D*	--	--	*59.9*	*E*	--	--
	Overall			28.1	C	--	--	26.4	C	--	--
3. US Route 60 (E-W) at	EB Thru	2		42.9	D	427	368	37.8	D	m#621	528
Route 199 WB Ramps (N-S)	EB Right	1		81.1	F	142	176	43.0	D	m78	293
Signalized	*EB Approach*			*51.2*	*D*	--	--	*39.1*	*D*	--	--
	WB Left	1	350	69.4	E	#267	271	130.4	F	#392	368
	WB Thru	2		14.9	B	219	272	8.3	A	142	579
	WB Approach			*25.7*	*C*	--	--	*41.0*	*D*	--	--
	NB Left	1	525	57.7	E	#540	509	103.6	F	#488	496
	NB Right	1		26.1	C	37	280	35.0	C	47	280
	NB Approach			*52.6*	*D*	--	--	*87.7*	*F*	--	--
	Overall			42.3	D	--	--	46.8	D	--	--
4. Centerville Road (E-W) at	EB Left	2	400	118.5	F	#178	425	70.8	E	119	425
Opportunity Way (NB)/	EB Thru	1		59.7	E	#932	954	89.0	F	#997	1937
Retail Entrance (SB)	EB Right	1	225	23.4	C	0	250	29.6	C	0	250
Signalized	*EB Approach*			*68.4*	*E*	--	--	*83.3*	*F*	--	--
	WB Left	2	250	78.5	E	#409	632	133.7	F	#418	793
	WB Thru	1		47.4	D	#1165	890	35.2	D	569	640
	WB Right	1	200	14.1	B	0	225	23.7	C	0	225
	WB Approach			*57.9*	*E*	--	--	*81.2*	*F*	--	--
	NB Thru-Left	1		58.8	E	80	99	47.6	D	98	1234
	NB Right	1	700	60.8	E	116	168	188.3	F	#747	724
	NB Approach			*60.6*	*E*	--	--	*174.9*	*F*	--	--
	SB Left	1	135	64.5	E	173	146	70.5	E	156	155
	SB Thru-Left	1		64.6	E	176	207	70.9	E	162	211
	SB Right	1	135	73.7	E	#194	159	79.4	E	164	159
	SB Approach			*67.7*	*E*	--	--	*73.8*	*E*	--	--
	Overall			62.4	E	--	--	102.6	F	--	--
5. Longhill Road (E-W) at	EB Left	1	200	13.3	B	37	175	11.5	B	21	132
Longhill Road (NB)/	EB Thru-Right	1		0.0	A	0	87	0.0	A	0	0
Warhill Trail (SB)	*EB Approach*			*3.0*	*A*	--	--	*2.3*	*A*	--	--
Unsignalized	WB Left	1	200	9.4	A	3	44	8.9	A	1	24
	WB Thru	1		0.0	A	0	3	0.0	A	0	0
	WB Right	1	200	0.0	A	0	61	0.0	A	0	54
	WB Approach			*0.3*	*A*	--	--	*0.1*	*A*	--	--
	NB Left-Thru-Right	1		97.6	F	52	66	26.3	D	12	47
	NB Approach			*97.6*	*F*	--	--	*26.3*	*D*	--	--
	SB Thru-Left	1		Err	F	Err	1497	Err	F	Err	1523
	SB Right	1	215	Err	F	Err	240	Err	F	Err	240
	SB Approach			*Err*	*F*	--	--	*Err*	*F*	--	--

[1] *Overall intersection LOS and delay reported for signalized intersections and roundabouts only.*

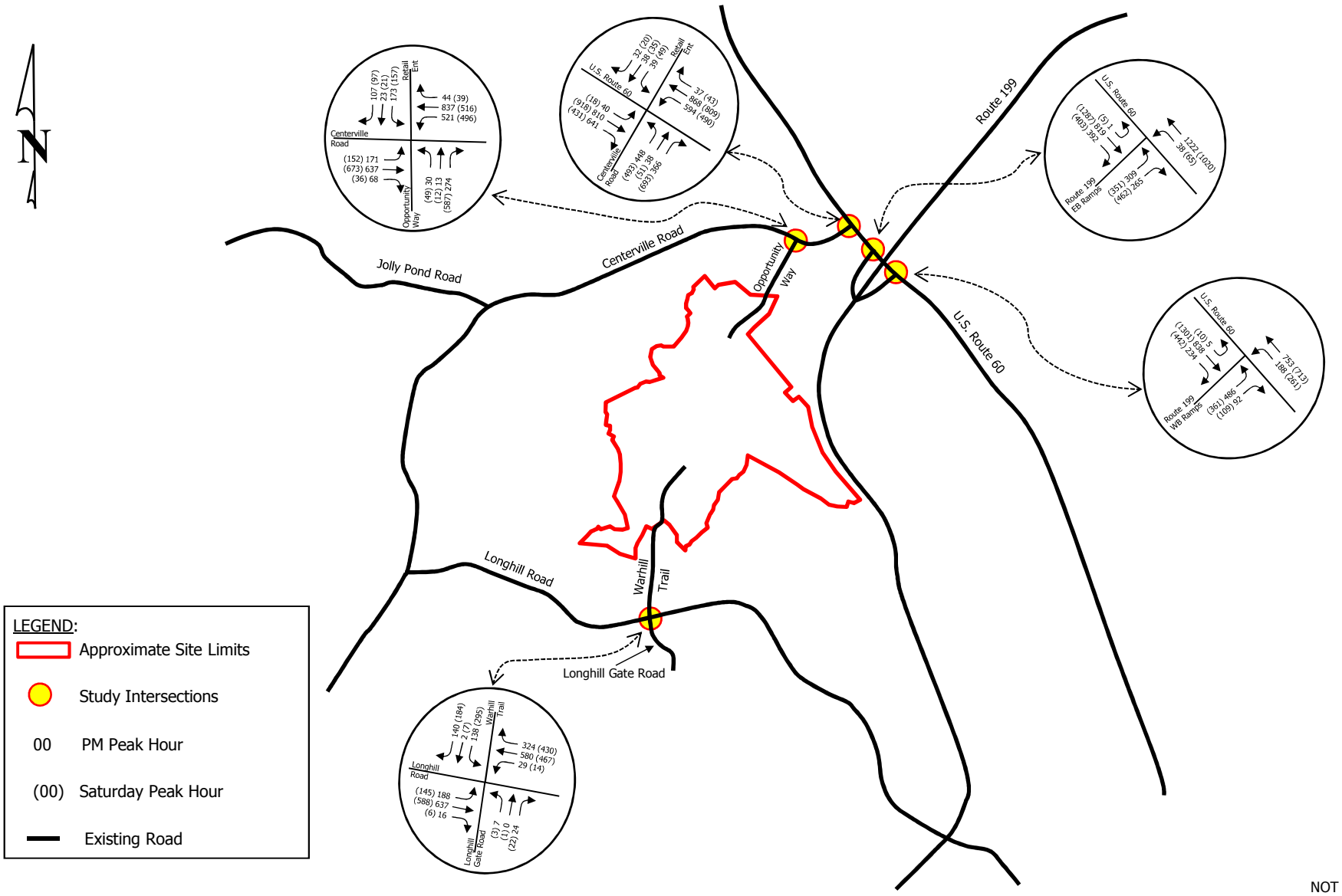
[2] *When more than one lane is present, the highest maximum queue is reported.*

[3] *Eastbound right is channelized and operates under Yield control (not subject to traffic signal control).*

Err LOS/Queue cannot be calculated by Synchro

- 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

m - Volume for 95th percentile queue is metered by upstream signal.



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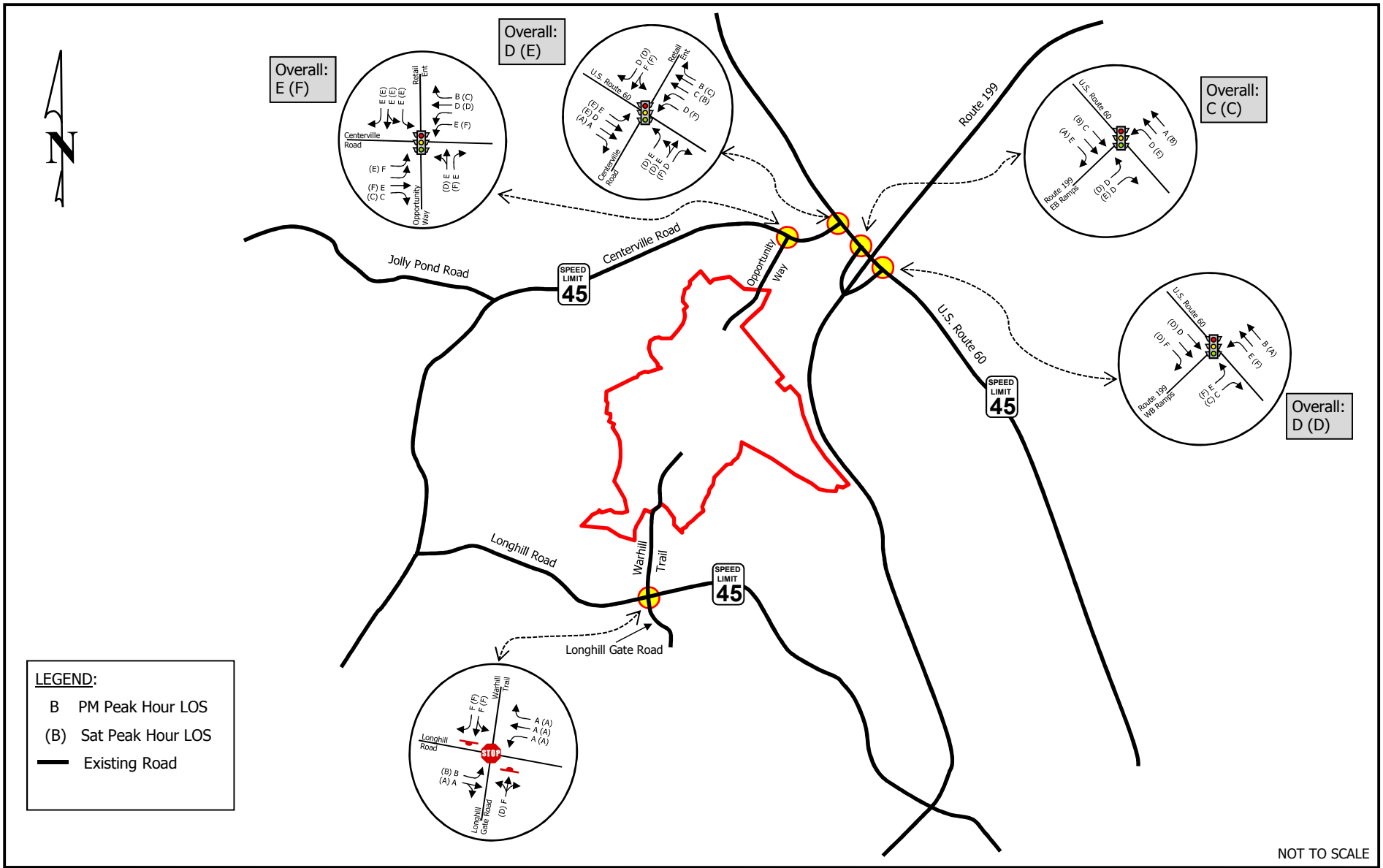
YOUR VISION ACHIEVED THROUGH OURS.

Warhill Sports Complex
2036 Total Future Volumes
(Existing + Growth + Lightfoot Marketplace Trips + Site Trips)

Figure
8-1



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Warhill Sports Complex
2036 Total Future Peak Hour Levels of Service

Figure
8-2

9 MUTCD Traffic Signal Warrant Analysis

The *Manual for Uniform Traffic Control Devices* (MUTCD) lists nine (9) warrants (or thresholds) that indicate if a traffic signal may be appropriate for an intersection. A review of several of these warrants was conducted for the Longhill Road/Warhill Trail/Longhill Gate Road intersection.

The warrant analyses were conducted following procedures from the 2009 edition of the *Manual on Uniform Traffic Control Devices* (MUTCD). Warrants 1, 2, and 3 of the nine signal warrants outlined in the 2009 MUTCD were considered for the analyses. Warrants 1, 2, and 3 are described in detail below. The other six (6) warrants are not applicable to this intersection.

The 100% volume thresholds were used to complete the analyses with all side street right turns excluded per VDOT policy. VDOT typically prefers Warrant 1 be met for installation of a traffic signal.

Warrant 1, Eight-Hour Vehicular Volume

This warrant is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

The need for a traffic control signal is considered when for each of any eight (8) hours of an average day, volume thresholds for both the mainline (total of both approaches) and side street (higher of the two approaches) are met.

Given the nature of the sports complex use, traffic is predominately geared toward peak hours, especially on weekdays. While the volume thresholds will be met during those peak hours, it is unlikely that the thresholds will be met over the remaining hours of the day.

Warrant 2, Four-Hour Vehicular Volume

This warrant is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic signal.

The need for a traffic control signal can be considered when, for each of any four (4) hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor street approach all fall above the applicable curve (on MUTCD Figure 4C-1) for the existing combination of approach lanes.

Similar to Warrant 1, given the nature of the sports complex use, traffic is predominately geared toward peak hours, especially on weekdays. While the volume thresholds will be met during those peak hours, it is unlikely that the thresholds will be met over the remaining hours of the day.

Warrant 3, Peak Hour

This warrant is intended for use at a location where traffic conditions are such that for a minimum of one (1) hour of an average day, the minor street traffic suffers undue delay when entering or crossing the major street.

The need for a traffic control signal can be considered if the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor street approach for one (1) hour of an average day falls above the applicable curve (on MUTCD Figure 4C-2) for the existing combination of approach lanes.

The 2016 existing volumes (and all future scenarios) meet this warrant.

10 CONCLUSIONS AND RECOMMENDATIONS

Based on the operational analyses the following is offered:

- The study area included the following intersections:
    - U.S. Route 60/Route 199 Eastbound Ramps (signalized);
    - U.S. Route 60/Route 199 Westbound Ramps (signalized);
    - U.S. Route 60/Centerville Road (signalized);
    - Centerville Road/Opportunity Way (signalized); and
    - Longhill Road/Warhill Trail (unsignalized).

- Existing weekday PM and Saturday peak hour traffic counts were conducted at the intersection on a Thursday and Saturday in May when public schools were in session (Thursday) and the sports complex fields were in full use.

- For purposes of this analysis, the expansion of the sports complex was assumed to be completed by 2030.

- The TIA examined both the PM peak hour and Saturday peak hour under existing (2016) conditions, background (2030) conditions, and total future (2030) conditions with the proposed expansion of the sports complex. Additionally, a buildout plus six years (2036) scenario was analyzed for both background and total future conditions for planning purposes only.

- The expansion of the complex was assumed to include:
    - 14 outdoor athletic fields;
    - Public gymnasium with three (3) basketball courts;
    - Pool expansion;
    - Running complex; and
    - WATA transfer station

- There are a few other uses shown on the Master Plan for the sports complex that will not be significant generators of traffic (i.e. multi-use trails, open space, etc.) and therefore are not included in the TIA.

- The expansion of the sports complex is estimated to generate an additional 382 weekday PM peak hour trips and 653 Saturday peak hour trips; this translates into 1,694 daily weekday trips and 2,629 daily Saturday trips.

- The study intersections generally operate at acceptable LOS under existing conditions with the exception of the Longhill Road/Warhill Trail intersection.
    - Under existing conditions, the intersection fails during both the PM and Saturday peak hours and a traffic signal is needed for the intersection to operate at acceptable levels of service.
    - During non-peak hours, the intersection operates acceptably.
    - A traffic signal at this location was called for at this intersection in the *Longhill Road Corridor Study*.

- Traffic entering the park is split equally between the two (2) entrances, while exiting traffic is skewed toward the Opportunity Way entrance (and traffic signal) due to the delays encountered at Longhill Road.

- The widening of Longhill Road to 4-lanes was **not** assumed in the TIA due to the timeframe of those improvements.

- Should background traffic grow at the assumed 2% annual rate, consideration should be given to widening of Centerville Road to 4-lanes through the study area.

- The majority of the study intersections can accommodate the traffic generated by the expansion of the sports complex.

- The following improvements to the Longhill Road/Warhill Trail/Longhill Gate Road intersection should be considered under existing and future conditions:
    - Signalization of the intersection; since the issue is limited to peak hours, manual traffic control (police officer or similar) during those hours should be considered.
    - Lengthening of the southbound right turn lane to accommodate queues; this improvement will be needed closer to full buildout of the complex.
    - Potential realignment of the residential driveway just west of the intersection to align with Blue Bill Run.

- A review of the MUTCD traffic signal warrants indicates the Longhill Road/Warhill Trail/Longhill Gate Road intersection will **not** meet Warrant 1 (8-hour warrant) or Warrant 2 (4-hour warrant). The intersection will meet Warrant 3 (peak hour warrant) but VDOT typically does not allow signalization based on the peak hour warrant only.

- Should a traffic signal be installed at the intersection, consideration should be given to opening the internal access road on a regular basis to allow traffic to utilize both exits at the complex. If a traffic signal is not installed, the opening of the internal access road on a regular basis will be of limited value.

Appendix A
Warhill Sports Complex
Proposed Master Plan

2016 Warhill Sports Complex
Master Plan

A- Baseball Complex
5 Baseball Fields, lighted
1 Multiuse Field for T-ball
Parking- 260-400 Spaces
Concession/Rest Room Building

B- Softball Complex
4 Large Softball/Baseball Fields
Parking- 260-400 Spaces
Concession/Rest Room Building

C- Soccer Complex
8 Soccer Fields, adjustable orientation
Parking- 440 Spaces
Concession/Rest Room Building

D- Stadium Complex
Football, Soccer, Track and Field, lighted
600-1000 Stadium parking, some shared,
some available in the utility corridor (N1)

E- Sports Field Complex
2 Multi-purpose Practice Fields
1 Lighted Competition Field
Bleachers for 500
Concession/Rest Room Building
Parking - 160 Spaces

F- Multi-purpose Field Complex
8 Multi-purpose Fields,
adjustable orientation, lighted
Parking - 400 Spaces
Concession/Rest Room Building

G1- Existing WISC Building

G2- Proposed Indoor Sports Facility

H- Unprogrammed Open Space

I- Unprogrammed Open Space

J1- Unprogrammed Open Space
J2- Unprogrammed Open Space
J3- Unprogrammed Open Space
J4- Unprogrammed Open Space
J5- Unprogrammed Open Space

K1- Multiuse Nature Trail, soft surface, 3.5 Miles around park perimeter with connections to Lafayette High School, Seasons Trace, and other neighborhoods

L- Paved Multiuse Trail in utility corridor

M- Paved Multiuse Trails around Soccer Complex- 1 mile
and Baseball/Softball Complex- 1-mile

N1- Existing Paved Multiuse Trail

N2- Unprogrammed Open Space capable of supporting additional stadium parking.

N3- Dominion Power Substation

O- Two options for a secondary park access to Centerville Road for park expansion, stadium and future high school development.
Vehicular control needed to prevent cut-through to Centerville Road,
but open for secondary emergency access in accordance with the VDOT Dam Agreement.

P- Running Center, multi-purpose room, office space, restrooms, multi-sports field

Q- BMX Park

8/23/2016

1 inch = 700 feet

0 700 1,400 Feet

Appendix B
Scoping Correspondence

PRE-SCOPE OF WORK MEETING FORM

Information on the Project
Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information				
Consultant Name: Tele: E-mail:	Timmons Group - Scott Dunn/Steve Schmidt 804-200-6955 scott.dunn@timmons.com/steve.schmidt@timmons.com			
Developer/Owner Name: Tele: E-mail:	James City County - Paul Holt, AICP, CNU-A 757-253-6685 paul.holt@jamescitycountyva.gov			
Project Information				
Project Name:	Warhill Sports Complex Expansion		Locality/County:	James City County, Virginia
Project Location: (Attach regional and site specific location map)	The site is generally located west of Route 199, south of Centerville Road (Route 614), and north of Longhill Road (Route 612) as shown on the attached Figure 1.			
Submission Type	Comp Plan ☒	Rezoning ☐	Site Plan ☐	Subd Plat ☐
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	James City County is updating the Master Plan for the Warhill Sports Complex to include several new uses in addition to the uses shown on the Master Plan that have yet to be built. Future uses include additional athletic fields (up to 14 fields per the Master Plan), a 7,500 seat indoor basketball facility (includes 6 basketball courts), a 25 meter competition pool addition to the WISC building, a running complex (includes 3,000 S.F. of indoor multi-purpose space), a WATA transfer station and miscellaneous other park uses. The project is expected to be built in phases over the next 20 years and be completed by 2036. Access to the site will be provided by the exiting entrances on Opportunity Way and Warhill Trail.			
Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential ☐	Commercial ☐	Mixed Use ☐	Other ☒

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

	Residential Uses(s) Number of Units: _____ ITE LU Code(s): _____ _____ _____ **Commercial Use(s)** ITE LU Code(s): _____ _____ _____ Square Ft or Other Variable:		_____ _____ _____ **Other Use(s)** ITE LU Code(s): 488 Other Non-ITE uses _____ Independent Variable(s): _____ _____ _____	
Total Peak Hour Trip Projection:	Less than 100 ☐	100 – 499 ☐	500 – 999 ☒	1,000 or more ☐

Traffic Impact Analysis Assumptions

Study Period	Existing Year: 2016	Build-out Year: 2036		Design Year: 2042
Study Area Boundaries (Attach map)	North: U.S. Route 60 (Richmond Road)		South: Longhill Road (Route 612)	
	East: Route 199		West: Centerville Road (Route 614)	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	Route 199/U.S. Route 60 Interchange Ramp improvement			
Consistency With Comprehensive Plan (Land use, transportation plan)	The James City County Comprehensive Plan calls for the site to be open space/recreation. The proposed uses are consistent with that designation.			
Available Traffic Data (Historical, forecasts)	Historical VDOT data County traffic data at the Warhill Sports Complex entrances Forecasts from the Longhill Road Corridor Study			
Trip Distribution (Attach sketch)	Road Name: see attached sketch		Road Name:	
	Road Name:		Road Name:	
Annual Vehicle Trip Growth Rate:	2.0% Centerville Road; 2.0% Longhill Road W of Warhill; 1.0% Longhill E of Warhill - see notes section	Peak Period for Study (check all that apply)	☐ AM ☒ PM ☒ SAT	
		Peak Hour of the Generator		
Study Intersections	1.Centerville Road (Route 614/Opportunity Way		6.	

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

and/or Road Segments (Attach additional sheets as necessary)	2.U.S. Route 60/Centerville Road (Route 614)	7.
	3.U.S. Route 60/Route 199 NB Ramps	8.
	4.U.S. Route 60/Route 199 SB Ramps	9.
	5.Longhill Road (Route 612)/Warhill Trail/Longhill Gate Road	10.
Trip Adjustment Factors	Internal allowance: ☐ Yes ☒ No Reduction: _____% trips	Pass-by allowance: ☐ Yes ☒ No Reduction: _____% trips
Software Methodology	☒ Synchro ☐ HCS (v.2000/+) ☐ aaSIDRA ☐ CORSIM ☐ Other _____	
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	Centerville Road (Route 614)/Opportunity Way U.S. Route 60/Centerville Road (Route 614) U.S. Route 60/Route 199 NB Ramps U.S. Route 60/Route 199 SB Ramps Longhill Road (Route 612)/Warhill Trail/Longhill Gate Road (potential signal)	
Improvement(s) Assumed or to be Considered	Route 199/U.S. Route 60 Interchange Ramp improvement	
Background Traffic Studies Considered	Longhill Road Corridor Study (2014) Lightfoot Marketplace TIA (2013)	
Plan Submission	☒ Master Development Plan (MDP) ☐ Generalized Development Plan (GDP) ☐ Preliminary/Sketch Plan ☐ Other Plan type (Final Site, Subd. Plan)	
Additional Issues to be Addressed	☒ Queuing analysis ☐ Actuation/Coordination ☐ Weaving analysis ☐ Merge analysis ☐ Bike/Ped Accommodations ☐ Intersection(s) ☐ TDM Measures ☐ Other _____	

NOTES on ASSUMPTIONS: 1. Trip generation methods/assumptions to be discussed at scoping. Due to the nature of the uses, ITE has limited to no data available for many of the uses. See notes on trip generation table for further details. Trip generation table only includes uses that would be significant generators. Others (i.e. walking trails, picnic areas) would generate trips on an irregular basis and were not included.

2. Two different trip distributions are proposed. Local distribution would apply to the uses/trips that would occur for the weekday PM peak hour and are based on the distributions in the Lightfoot Marketplace TIA, the

residential development surrounding the site, the road network and engineering judgement. Regional (or event) distributions would apply to the Saturday peak hour and would put a focus on out of town visitors along with hotel stays.

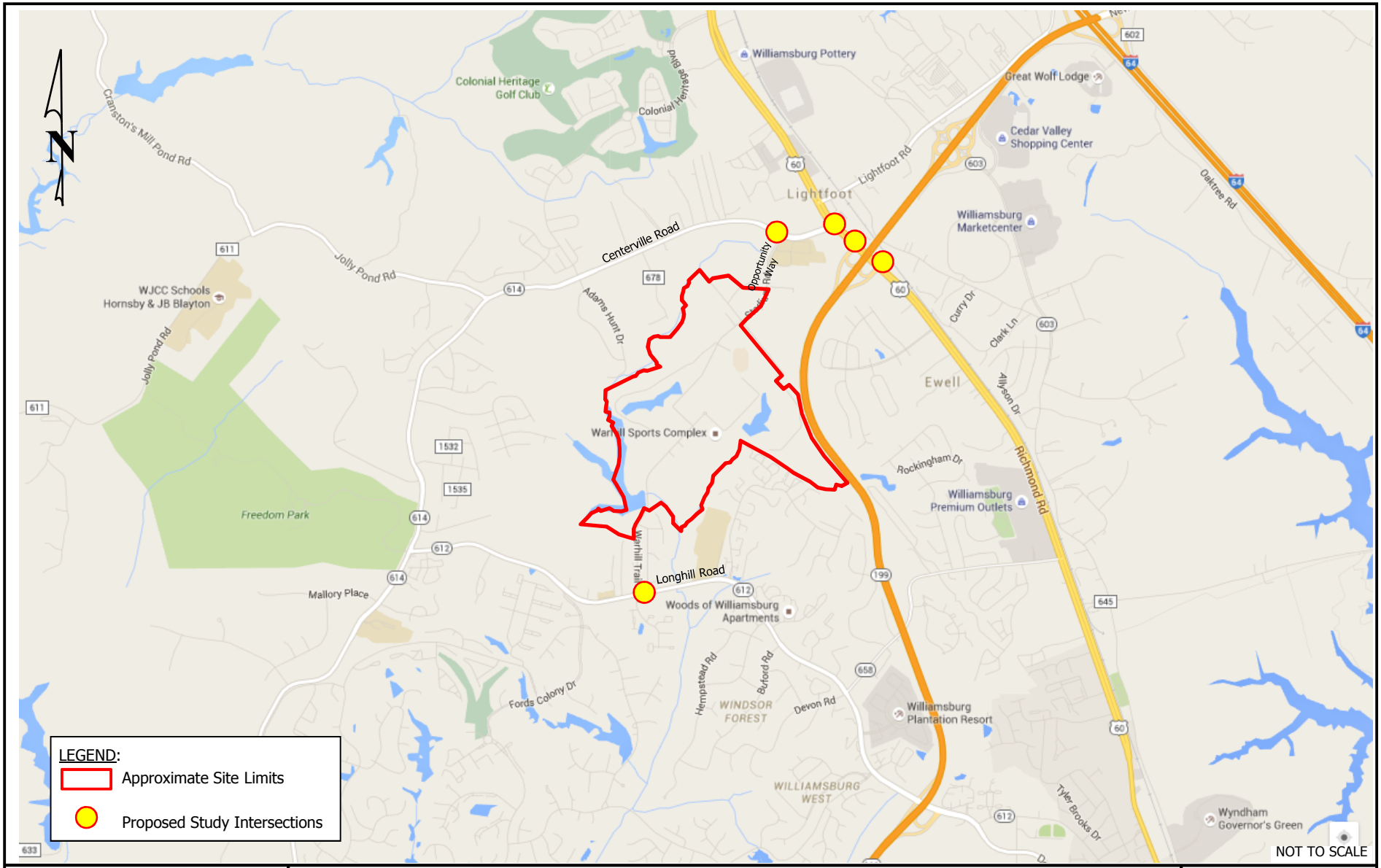
3. Annual growth rate is pulled directly from the Longhill Road Corridor Study. It is important to note that the Longhill growth rates include trips from other developments. Likewise, if these growth rates are approved/used for this TIA, no additional trips from other developments will be considered.

4. Traffic data will be collected on a weekday (Tuesday/Wednesday/or Thursday) for the PM peak hour and for a Saturday peak hour when the fields are in use.

SIGNED: _____ DATE: 2/4/16
Applicant or Consultant

PRINT NAME: Stephen Schmidt
Applicant or Consultant

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.



TIMMONS GROUP
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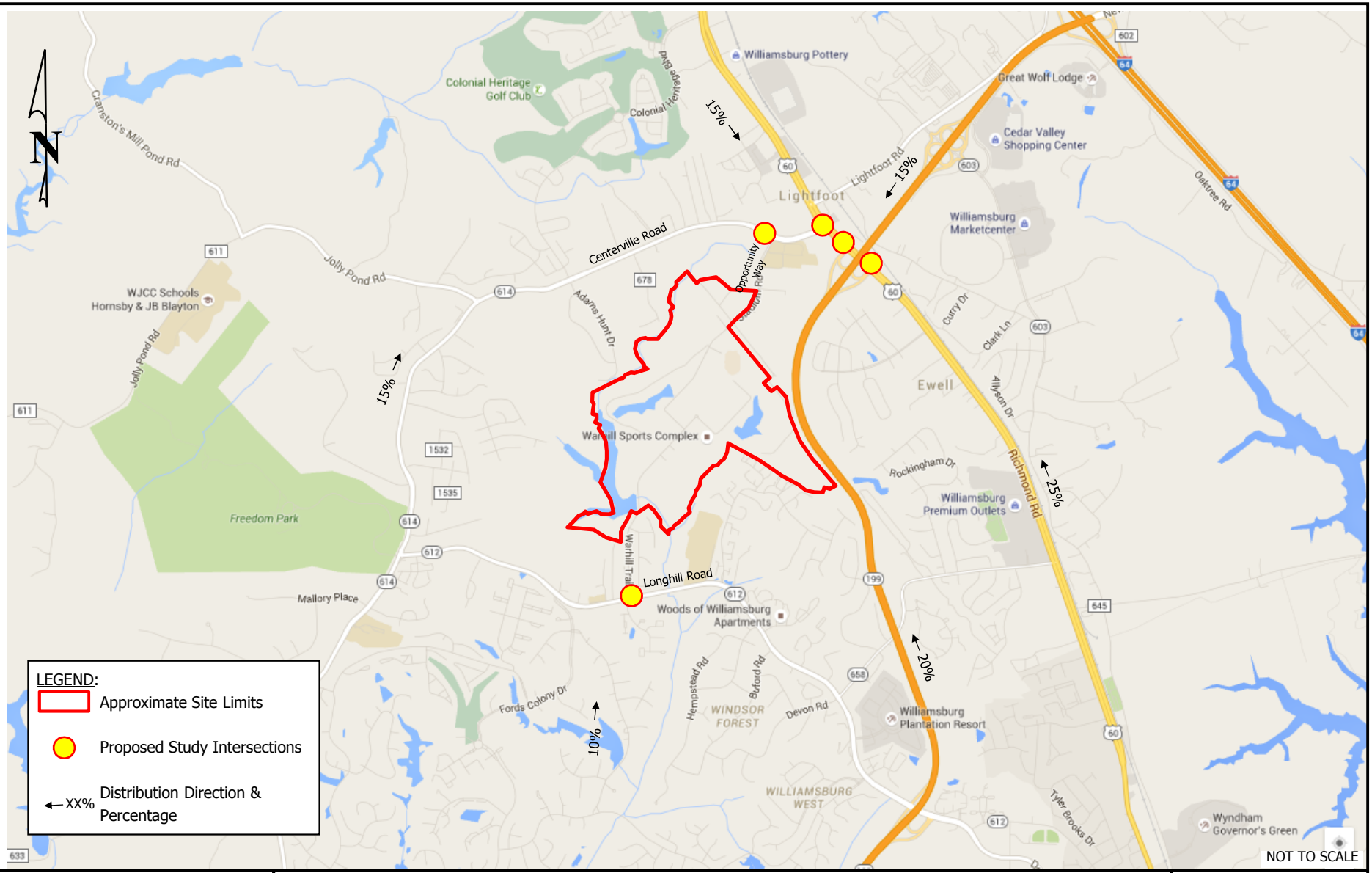
Warhill Sports Complex
Site Location and Proposed Study Intersections

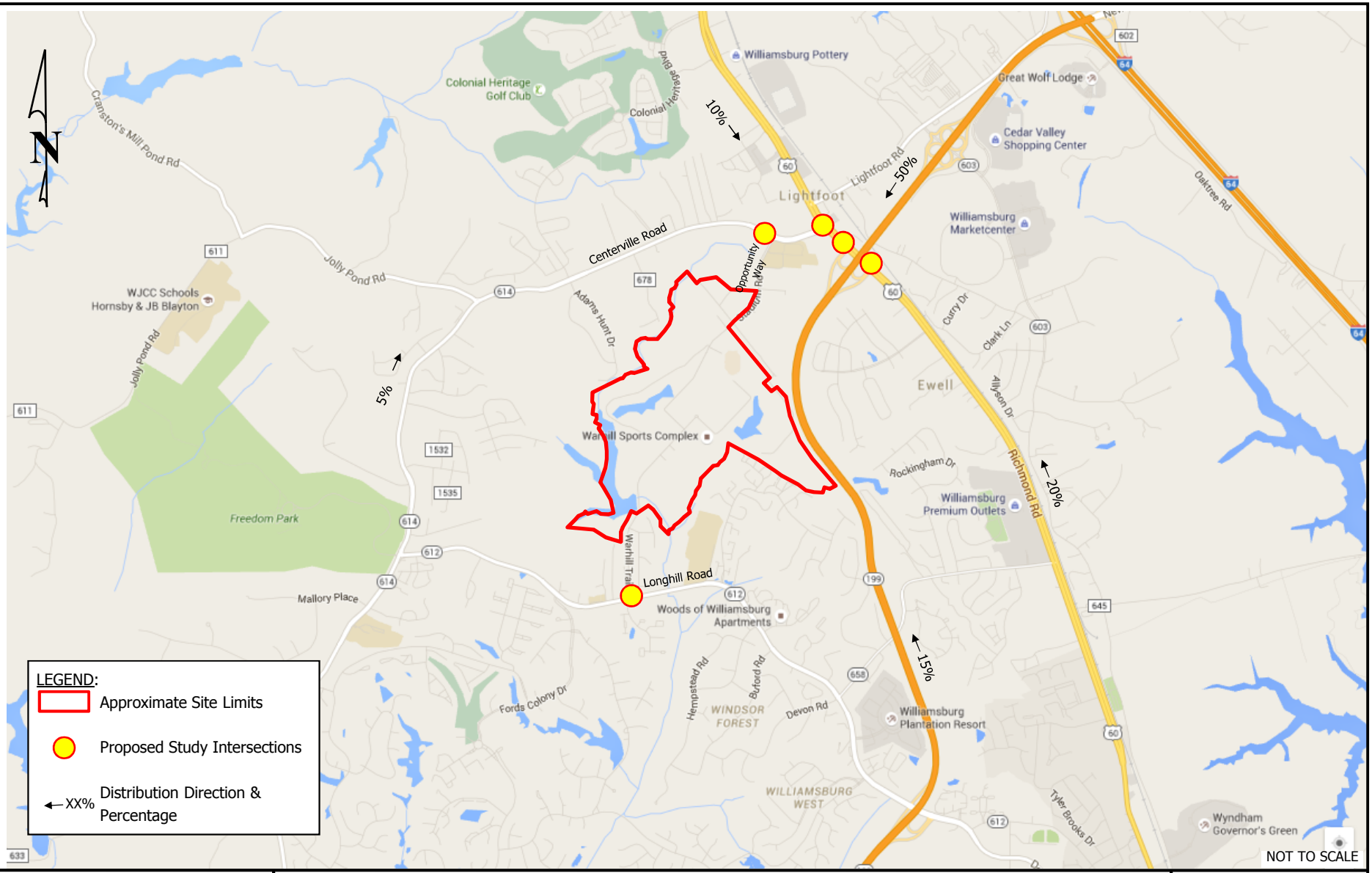
Figure
1



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Warhill Sports Complex
Proposed Trip Distributions - Local

Figure
2



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Warhill Sports Complex
Proposed Trip Distributions – Regional (Event)

Figure
3

Table 1

Trip Generation Summary
Warhill Sports Complex - James City County, Virginia

LAND USE	ITE CODE	AMOUNT	UNITS	WEEKDAY PM PEAK HOUR ADT	IN	OUT	TOTAL	SATURDAY Midday Peak Hour ADT	IN	OUT	TOTAL
Soccer Complex[1]	488	14	Fields	999	166	82	248	1,644	204	221	425
Basketball Arena[2]		7,500	Seats	6,818	511	51	562	6,818	87	95	182
Pool Addition[3]		1	Pool	214	36	17	53	352	44	47	91
Running Complex[4]		3,000	S.F.	40	20	0	20	100	50	0	50
WATA Transfer Station[5]		1	Station	298	13	13	26	298	13	13	26
Total Proposed Trips				8,369	746	163	909	9,212	398	376	774

Notes:

(1) Trip generation source: Institute of Transportation Engineers' Trip Generation Manual 9th Edition (2012). All fields shown on Master Plan were assumed to be soccer fields for trip generation purposes only.

(2) All trip generation estimates assume AVO of 2.2. PM trip generation assumes event time would start outside of adjacent street peak hour and that at most 15% of attendees would arrive during PM peak. PM outbound assumed to be 10% of inbound. No events were assumed for Sat midday peak hour but courts may be used for clinics/games. Saturday midday peak hour trip generated using soccer complex rates (6 courts ("fields")).

(3) Pool addition would include a 25 meter competitive pool. For trip generation purposes, the pool was assumed to be 3 soccer fields.

(4) Running complex trips based on data provided by County. Weekday ADT/PM peak hour assumed to be for local running club workouts (20 attendees). Saturday peak hour assumed to be for high school home meet (96 athletes on 2 buses plus 48 other attendees). Other events may draw more traffic but on-site parking may limit other uses during those events.

(5) WATA transfer station trip generation based on data provided by WATA. Station will be served by 4 lines with each line serviced at most twice per hour and 74 times per day which equates to 16 hourly trips (8 in and 8 out) and 148 ADT. Transfer station includes 15 parking spaces which were assumed to turn over every 3 hours (i.e. 33% every hour). Parking space ADT = 5 turnovers/space/day = 5 turnovers * 2 trips (1 in and 1 out) * 15 spaces = 150 ADT.

Appendix C
Existing Traffic Counts

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 1-Opportunity Way and Centerville Rd. SAT
Site Code :
Start Date : 5/14/2016

Groups Printed- Car

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	1	0	1	1	73	63	5	142	57	1	2	0	60	5	111	0	0	116	319
10:15 AM	2	0	0	0	2	0	65	74	8	147	53	0	5	0	58	13	125	0	0	138	345
10:30 AM	0	0	1	0	1	0	68	57	7	132	93	1	4	0	98	20	114	1	0	135	366
10:45 AM	0	0	0	0	0	0	91	62	10	163	74	1	5	0	80	16	109	0	2	127	370
Total	2	0	2	0	4	1	297	256	30	584	277	3	16	0	296	54	459	1	2	516	1400
11:00 AM	0	0	0	0	0	0	81	60	8	149	83	0	11	0	94	9	104	1	0	114	357
11:15 AM	0	0	0	0	0	1	80	54	6	141	45	0	7	0	52	12	111	0	0	123	316
11:30 AM	2	0	0	0	2	0	91	50	9	150	63	0	7	0	70	7	121	0	0	128	350
11:45 AM	0	0	0	0	0	0	90	86	9	185	83	0	7	1	91	10	107	1	0	118	394
Total	2	0	0	0	2	1	342	250	32	625	274	0	32	1	307	38	443	2	0	483	1417
12:00 PM	1	0	1	0	2	2	89	68	2	161	88	0	15	0	103	7	84	0	0	91	357
12:15 PM	0	0	0	0	0	0	82	42	2	126	75	0	8	0	83	7	87	0	0	94	303
12:30 PM	1	1	0	0	2	3	79	51	2	135	99	2	17	0	118	4	125	0	0	129	384
12:45 PM	0	1	2	0	3	0	80	63	6	149	69	0	8	0	77	13	110	3	0	126	355
Total	2	2	3	0	7	5	330	224	12	571	331	2	48	0	381	31	406	3	0	440	1399
01:00 PM	1	0	0	0	1	1	94	62	2	159	120	0	11	0	131	8	104	0	0	112	403
01:15 PM	2	0	0	0	2	0	91	69	2	162	80	0	12	0	92	11	108	0	0	119	375
01:30 PM	0	0	0	0	0	0	81	81	1	163	70	0	3	0	73	14	107	1	1	123	359
01:45 PM	0	2	0	0	2	0	102	54	3	159	55	0	6	0	61	14	94	0	0	108	330
Total	3	2	0	0	5	1	368	266	8	643	325	0	32	0	357	47	413	1	1	462	1467
Grand Total	9	4	5	0	18	8	1337	996	82	2423	1207	5	128	1	1341	170	1721	7	3	1901	5683
Apprch %	50	22.2	27.8	0		0.3	55.2	41.1	3.4		90	0.4	9.5	0.1		8.9	90.5	0.4	0.2		
Total %	0.2	0.1	0.1	0	0.3	0.1	23.5	17.5	1.4	42.6	21.2	0.1	2.3	0	23.6	3	30.3	0.1	0.1	33.5	

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:30 PM																	
12:30 PM	1	**1**	0	2	**3**	79	51	133	99	**2**	**17**	118	4	**125**	0	**129**	382
12:45 PM	0	1	**2**	**3**	0	80	63	143	69	0	8	77	**13**	110	**3**	126	349
01:00 PM	1	0	0	1	1	**94**	62	157	**120**	0	11	**131**	8	104	0	112	**401**
01:15 PM	**2**	0	0	2	0	91	**69**	**160**	80	0	12	92	11	108	0	119	373
Total Volume	4	2	2	8	4	344	245	593	368	2	48	418	36	447	3	486	1505
% App. Total	50	25	25		0.7	58	41.3		88	0.5	11.5		7.4	92	0.6		
PHF	.500	.500	.250	.667	.333	.915	.888	.927	.767	.250	.706	.798	.692	.894	.250	.942	.938

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 1-Opportunity Way and Centerville Rd. SAT
Site Code :
Start Date : 5/14/2016

Groups Printed- Truck

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2
10:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
10:30 AM	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	0	0	0	0	0	3
10:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	4
Total	0	0	0	0	0	0	3	2	0	5	0	0	2	0	2	0	5	0	0	5	12
11:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
11:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
11:30 AM	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	0	3	0	0	3	6
11:45 AM	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	0	0	0	6	2	0	8	0	0	1	0	1	0	7	0	0	7	16
12:00 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
12:30 PM	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	0	0	0	0	0	3
12:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
Total	0	0	0	0	0	0	5	1	0	6	0	0	1	0	1	0	6	0	0	6	13
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
01:30 PM	0	0	0	0	0	0	1	1	0	2	1	0	1	0	2	0	2	0	0	2	6
01:45 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
Total	0	0	0	0	0	0	4	1	0	5	1	0	1	0	2	0	6	0	0	6	13
Grand Total	0	0	0	0	0	0	18	6	0	24	1	0	5	0	6	0	24	0	0	24	54
Apprch %	0	0	0	0		0	75	25	0		16.7	0	83.3	0		0	100	0	0		
Total %	0	0	0	0	0	0	33.3	11.1	0	44.4	1.9	0	9.3	0	11.1	0	44.4	0	0	44.4	

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:45 AM																	
10:45 AM	0	0	0	0	0	1	0	1	0	0	**1**	**1**	0	2	0	2	4
11:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	**3**	0	**3**	4
11:15 AM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	1	0	1	3
11:30 AM	0	0	0	0	0	1	**1**	2	0	0	1	1	0	3	0	3	**6**
Total Volume	0	0	0	0	0	5	1	6	0	0	2	2	0	9	0	9	17
% App. Total	0	0	0		0	83.3	16.7		0	0	100		0	100	0		
PHF	.000	.000	.000	.000	.000	.625	.250	.750	.000	.000	.500	.500	.000	.750	.000	.750	.708

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 1-Opportunity Way and Centerville Rd. SAT
Site Code :
Start Date : 5/14/2016

Groups Printed- Bicycles on Crosswalk

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:00 AM																	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 1-Opportunity Way and Centerville Rd. SAT
Site Code :
Start Date : 5/14/2016

Groups Printed- Pedestrians

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:00 AM																	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 1-Opportunity Way and Centerville Rd. SAT
Site Code :
Start Date : 5/14/2016

Groups Printed- Car - Truck

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	1	0	1	1	73	64	5	143	57	1	2	0	60	5	112	0	0	117	321
10:15 AM	2	0	0	0	2	0	66	74	8	148	53	0	5	0	58	13	127	0	0	140	348
10:30 AM	0	0	1	0	1	0	69	58	7	134	93	1	5	0	99	20	114	1	0	135	369
10:45 AM	0	0	0	0	0	0	92	62	10	164	74	1	6	0	81	16	111	0	2	129	374
Total	2	0	2	0	4	1	300	258	30	589	277	3	18	0	298	54	464	1	2	521	1412
11:00 AM	0	0	0	0	0	0	82	60	8	150	83	0	11	0	94	9	107	1	0	117	361
11:15 AM	0	0	0	0	0	1	82	54	6	143	45	0	7	0	52	12	112	0	0	124	319
11:30 AM	2	0	0	0	2	0	92	51	9	152	63	0	8	0	71	7	124	0	0	131	356
11:45 AM	0	0	0	0	0	0	92	87	9	188	83	0	7	1	91	10	107	1	0	118	397
Total	2	0	0	0	2	1	348	252	32	633	274	0	33	1	308	38	450	2	0	490	1433
12:00 PM	1	0	1	0	2	2	92	68	2	164	88	0	15	0	103	7	85	0	0	92	361
12:15 PM	0	0	0	0	0	0	82	42	2	126	75	0	8	0	83	7	89	0	0	96	305
12:30 PM	1	1	0	0	2	3	80	52	2	137	99	2	18	0	119	4	125	0	0	129	387
12:45 PM	0	1	2	0	3	0	81	63	6	150	69	0	8	0	77	13	113	3	0	129	359
Total	2	2	3	0	7	5	335	225	12	577	331	2	49	0	382	31	412	3	0	446	1412
01:00 PM	1	0	0	0	1	1	94	62	2	159	120	0	11	0	131	8	104	0	0	112	403
01:15 PM	2	0	0	0	2	0	92	69	2	163	80	0	12	0	92	11	111	0	0	122	379
01:30 PM	0	0	0	0	0	0	82	82	1	165	71	0	4	0	75	14	109	1	1	125	365
01:45 PM	0	2	0	0	2	0	104	54	3	161	55	0	6	0	61	14	95	0	0	109	333
Total	3	2	0	0	5	1	372	267	8	648	326	0	33	0	359	47	419	1	1	468	1480
Grand Total	9	4	5	0	18	8	1355	1002	82	2447	1208	5	133	1	1347	170	1745	7	3	1925	5737
Apprch %	50	22.2	27.8	0		0.3	55.4	40.9	3.4		89.7	0.4	9.9	0.1		8.8	90.6	0.4	0.2		
Total %	0.2	0.1	0.1	0	0.3	0.1	23.6	17.5	1.4	42.7	21.1	0.1	2.3	0	23.5	3	30.4	0.1	0.1	33.6	
Car	9	4	5	0	18	8	1337	996	82	2423	1207	5	128	1	1341	170	1721	7	3	1901	5683
% Car	100	100	100	0	100	100	98.7	99.4	100	99	99.9	100	96.2	100	99.6	100	98.6	100	100	98.8	99.1
Truck	0	0	0	0	0	0	18	6	0	24	1	0	5	0	6	0	24	0	0	24	54
% Truck	0	0	0	0	0	0	1.3	0.6	0	1	0.1	0	3.8	0	0.4	0	1.4	0	0	1.2	0.9

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:30 PM																	
12:30 PM	1	**1**	0	2	**3**	80	52	135	99	**2**	**18**	119	4	**125**	0	**129**	385
12:45 PM	0	1	**2**	**3**	0	81	63	144	69	0	8	77	**13**	113	**3**	129	353
01:00 PM	1	0	0	1	1	**94**	62	157	**120**	0	11	**131**	8	104	0	112	**401**
01:15 PM	**2**	0	0	2	0	92	**69**	**161**	80	0	12	92	11	111	0	122	377
Total Volume	4	2	2	8	4	347	246	597	368	2	49	419	36	453	3	492	1516
% App. Total	50	25	25		0.7	58.1	41.2		87.8	0.5	11.7		7.3	92.1	0.6		
PHF	.500	.500	.250	.667	.333	.923	.891	.927	.767	.250	.681	.800	.692	.906	.250	.953	.945

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Groups Printed- Car

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	2	0	0	0	2	1	100	37	2	140	43	0	7	0	50	6	90	0	0	96	288
04:15 PM	0	0	0	0	0	0	117	38	6	161	41	0	3	0	44	9	106	0	0	115	320
04:30 PM	1	0	1	0	2	0	130	40	5	175	25	0	2	0	27	0	95	0	0	95	299
04:45 PM	0	0	0	0	0	0	115	48	3	166	31	0	6	0	37	5	123	1	0	129	332
Total	3	0	1	0	4	1	462	163	16	642	140	0	18	0	158	20	414	1	0	435	1239
05:00 PM	1	0	0	0	1	0	123	76	3	202	56	0	3	0	59	11	85	1	0	97	359
05:15 PM	0	1	2	0	3	1	165	132	1	299	62	2	1	0	65	12	84	0	0	96	463
05:30 PM	0	0	0	0	0	0	140	92	2	234	50	1	7	0	58	12	131	0	0	143	435
05:45 PM	0	0	0	0	0	0	99	57	1	157	35	0	5	0	40	13	92	0	0	105	302
Total	1	1	2	0	4	1	527	357	7	892	203	3	16	0	222	48	392	1	0	441	1559
Grand Total	4	1	3	0	8	2	989	520	23	1534	343	3	34	0	380	68	806	2	0	876	2798
Apprch %	50	12.5	37.5	0		0.1	64.5	33.9	1.5		90.3	0.8	8.9	0		7.8	92	0.2	0		
Total %	0.1	0	0.1	0	0.3	0.1	35.3	18.6	0.8	54.8	12.3	0.1	1.2	0	13.6	2.4	28.8	0.1	0	31.3	

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	115	48	163	31	0	6	37	5	123	**1**	129	329
05:00 PM	**1**	0	0	1	0	123	76	199	56	0	3	59	11	85	1	97	356
05:15 PM	0	**1**	**2**	**3**	**1**	**165**	**132**	**298**	**62**	**2**	1	**65**	**12**	84	0	96	**462**
05:30 PM	0	0	0	0	0	140	92	232	50	1	**7**	58	12	**131**	0	**143**	433
Total Volume	1	1	2	4	1	543	348	892	199	3	17	219	40	423	2	465	1580
% App. Total	25	25	50		0.1	60.9	39		90.9	1.4	7.8		8.6	91	0.4		
PHF	.250	.250	.250	.333	.250	.823	.659	.748	.802	.375	.607	.842	.833	.807	.500	.813	.855

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Groups Printed- Truck

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	5	1	0	6	1	0	0	0	1	2	8	1	0	11	18
04:15 PM	0	0	0	0	0	0	5	1	0	6	1	0	0	0	1	0	5	2	0	7	14
04:30 PM	0	0	0	0	0	0	5	4	0	9	2	0	2	0	4	4	3	0	0	7	20
04:45 PM	0	0	0	0	0	0	4	6	0	10	1	0	0	0	1	0	3	0	0	3	14
Total	0	0	0	0	0	0	19	12	0	31	5	0	2	0	7	6	19	3	0	28	66
05:00 PM	1	0	0	0	1	0	6	0	0	6	0	0	0	0	0	1	2	0	0	3	10
05:15 PM	0	0	0	0	0	0	5	2	0	7	0	0	0	0	0	0	1	0	0	1	8
05:30 PM	0	0	0	0	0	0	5	1	0	6	0	0	1	0	1	1	0	0	0	1	8
05:45 PM	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	0	2	0	0	2	5
Total	1	0	0	0	1	0	18	4	0	22	0	0	1	0	1	2	5	0	0	7	31
Grand Total	1	0	0	0	1	0	37	16	0	53	5	0	3	0	8	8	24	3	0	35	97
Apprch %	100	0	0	0		0	69.8	30.2	0		62.5	0	37.5	0		22.9	68.6	8.6	0		
Total %	1	0	0	0	1	0	38.1	16.5	0	54.6	5.2	0	3.1	0	8.2	8.2	24.7	3.1	0	36.1	

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**5**	1	6	1	0	0	1	2	**8**	1	**11**	18
04:15 PM	0	0	0	0	0	5	1	6	1	0	0	1	0	5	**2**	7	14
04:30 PM	0	0	0	0	0	5	4	9	**2**	0	**2**	**4**	**4**	3	0	7	**20**
04:45 PM	0	0	0	0	0	4	**6**	**10**	1	0	0	1	0	3	0	3	14
Total Volume	0	0	0	0	0	19	12	31	5	0	2	7	6	19	3	28	66
% App. Total	0	0	0		0	61.3	38.7		71.4	0	28.6		21.4	67.9	10.7		
PHF	.000	.000	.000	.000	.000	.950	.500	.775	.625	.000	.250	.438	.375	.594	.375	.636	.825

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Groups Printed- Bicycles on Crosswalk

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Pedestrians

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Car - Truck

	Opportunity Way Southbound					Centerville Rd. Westbound					Opportunity Way Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	2	0	0	0	2	1	105	38	2	146	44	0	7	0	51	8	98	1	0	107	306
04:15 PM	0	0	0	0	0	0	122	39	6	167	42	0	3	0	45	9	111	2	0	122	334
04:30 PM	1	0	1	0	2	0	135	44	5	184	27	0	4	0	31	4	98	0	0	102	319
04:45 PM	0	0	0	0	0	0	119	54	3	176	32	0	6	0	38	5	126	1	0	132	346
Total	3	0	1	0	4	1	481	175	16	673	145	0	20	0	165	26	433	4	0	463	1305
05:00 PM	2	0	0	0	2	0	129	76	3	208	56	0	3	0	59	12	87	1	0	100	369
05:15 PM	0	1	2	0	3	1	170	134	1	306	62	2	1	0	65	12	85	0	0	97	471
05:30 PM	0	0	0	0	0	0	145	93	2	240	50	1	8	0	59	13	131	0	0	144	443
05:45 PM	0	0	0	0	0	0	101	58	1	160	35	0	5	0	40	13	94	0	0	107	307
Total	2	1	2	0	5	1	545	361	7	914	203	3	17	0	223	50	397	1	0	448	1590
Grand Total	5	1	3	0	9	2	1026	536	23	1587	348	3	37	0	388	76	830	5	0	911	2895
Apprch %	55.6	11.1	33.3	0		0.1	64.7	33.8	1.4		89.7	0.8	9.5	0		8.3	91.1	0.5	0		
Total %	0.2	0	0.1	0	0.3	0.1	35.4	18.5	0.8	54.8	12	0.1	1.3	0	13.4	2.6	28.7	0.2	0	31.5	
Car	4	1	3	0	8	2	989	520	23	1534	343	3	34	0	380	68	806	2	0	876	2798
% Car	80	100	100	0	88.9	100	96.4	97	100	96.7	98.6	100	91.9	0	97.9	89.5	97.1	40	0	96.2	96.6
Truck	1	0	0	0	1	0	37	16	0	53	5	0	3	0	8	8	24	3	0	35	97
% Truck	20	0	0	0	11.1	0	3.6	3	0	3.3	1.4	0	8.1	0	2.1	10.5	2.9	60	0	3.8	3.4

	Opportunity Way Southbound				Centerville Rd. Westbound				Opportunity Way Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	119	54	173	32	0	6	38	5	126	**1**	132	343
05:00 PM	**2**	0	0	2	0	129	76	205	56	0	3	59	12	87	1	100	366
05:15 PM	0	**1**	**2**	**3**	**1**	**170**	**134**	**305**	**62**	**2**	1	**65**	12	85	0	97	**470**
05:30 PM	0	0	0	0	0	145	93	238	50	1	**8**	59	**13**	**131**	0	**144**	441
Total Volume	2	1	2	5	1	563	357	921	200	3	18	221	42	429	2	473	1620
% App. Total	40	20	40		0.1	61.1	38.8		90.5	1.4	8.1		8.9	90.7	0.4		
PHF	.250	.250	.250	.417	.250	.828	.666	.755	.806	.375	.563	.850	.808	.819	.500	.821	.862

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Groups Printed- Car

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	82	142	5	0	229	8	11	11	0	30	13	108	51	0	172	64	13	97	0	174	605
10:15 AM	74	148	7	1	230	6	5	7	0	18	9	123	59	0	191	78	12	88	0	178	617
10:30 AM	75	180	15	2	272	7	16	7	0	30	11	104	45	1	161	95	19	97	0	211	674
10:45 AM	100	178	6	1	285	8	4	10	0	22	14	135	56	3	208	92	1	82	0	175	690
Total	331	648	33	4	1016	29	36	35	0	100	47	470	211	4	732	329	45	364	0	738	2586
11:00 AM	85	179	7	1	272	4	6	4	0	14	7	110	56	1	174	103	4	87	2	196	656
11:15 AM	77	153	6	2	238	7	3	6	0	16	7	145	53	2	207	72	11	82	0	165	626
11:30 AM	77	169	5	0	251	8	11	11	0	30	9	136	65	1	211	91	9	87	1	188	680
11:45 AM	104	205	10	0	319	8	6	3	0	17	4	174	72	1	251	97	12	89	0	198	785
Total	343	706	28	3	1080	27	26	24	0	77	27	565	246	5	843	363	36	345	3	747	2747
12:00 PM	85	169	15	3	272	12	4	13	0	29	12	155	61	1	229	89	6	81	0	176	706
12:15 PM	71	194	8	1	274	12	4	9	0	25	11	177	47	2	237	72	13	67	0	152	688
12:30 PM	85	195	3	0	283	7	10	11	0	28	9	135	45	1	190	125	8	87	0	220	721
12:45 PM	72	201	3	1	277	5	12	13	0	30	10	152	62	1	225	90	20	89	0	199	731
Total	313	759	29	5	1106	36	30	46	0	112	42	619	215	5	881	376	47	324	0	747	2846
01:00 PM	82	175	2	1	260	3	5	10	0	18	14	180	58	2	254	98	9	107	0	214	746
01:15 PM	83	172	6	2	263	4	7	15	0	26	10	187	63	2	262	100	13	93	0	206	757
01:30 PM	101	187	6	3	297	11	6	13	0	30	5	173	53	0	231	73	11	74	0	158	716
01:45 PM	85	179	10	0	274	6	9	7	0	22	9	170	58	2	239	78	10	69	0	157	692
Total	351	713	24	6	1094	24	27	45	0	96	38	710	232	6	986	349	43	343	0	735	2911
Grand Total	1338	2826	114	18	4296	116	119	150	0	385	154	2364	904	20	3442	1417	171	1376	3	2967	11090
Apprch %	31.1	65.8	2.7	0.4		30.1	30.9	39	0		4.5	68.7	26.3	0.6		47.8	5.8	46.4	0.1		
Total %	12.1	25.5	1	0.2	38.7	1	1.1	1.4	0	3.5	1.4	21.3	8.2	0.2	31	12.8	1.5	12.4	0	26.8	

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:30 PM																	
12:30 PM	**85**	195	3	**283**	**7**	10	11	28	9	135	45	189	**125**	8	87	**220**	720
12:45 PM	72	**201**	3	276	5	**12**	13	**30**	10	152	62	224	90	**20**	89	199	729
01:00 PM	82	175	2	259	3	5	10	18	**14**	180	58	252	98	9	**107**	214	743
01:15 PM	83	172	**6**	261	4	7	**15**	26	10	**187**	**63**	**260**	100	13	93	206	**753**
Total Volume	322	743	14	1079	19	34	49	102	43	654	228	925	413	50	376	839	2945
% App. Total	29.8	68.9	1.3		18.6	33.3	48		4.6	70.7	24.6		49.2	6	44.8		
PHF	.947	.924	.583	.953	.679	.708	.817	.850	.768	.874	.905	.889	.826	.625	.879	.953	.978

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Groups Printed- Truck

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	1	0	0	1	0	0	0	0	0	2	3	0	0	5	1	0	1	0	2	8
10:15 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	7
10:30 AM	1	2	0	0	3	0	0	2	0	2	0	1	0	0	1	0	0	0	0	0	6
10:45 AM	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	2	0	2	6
Total	2	8	0	0	10	0	0	2	0	2	2	7	0	0	9	1	0	5	0	6	27
11:00 AM	1	3	0	0	4	0	0	0	0	0	1	1	0	0	2	3	0	0	0	3	9
11:15 AM	1	5	0	0	6	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	10
11:30 AM	2	2	0	0	4	0	0	0	0	0	0	2	0	0	2	2	0	1	0	3	9
11:45 AM	1	1	1	0	3	0	0	0	0	0	0	2	2	0	4	0	0	0	0	0	7
Total	5	11	1	0	17	0	0	0	0	0	1	8	2	0	11	5	0	2	0	7	35
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	1	0	0	0	1	4
12:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	2	0	2	5
12:30 PM	2	2	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
12:45 PM	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	1	1	0	0	2	7
Total	3	6	0	0	9	0	0	0	0	0	0	5	3	0	8	2	1	2	0	5	22
01:00 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
01:15 PM	0	3	0	0	3	1	1	0	0	2	0	4	0	0	4	0	0	3	0	3	12
01:30 PM	2	2	0	0	4	0	0	0	0	0	0	3	0	0	3	1	0	1	0	2	9
01:45 PM	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Total	4	7	0	0	11	1	1	0	0	2	0	9	0	0	9	1	0	4	0	5	27
Grand Total	14	32	1	0	47	1	1	2	0	4	3	29	5	0	37	9	1	13	0	23	111
Apprch %	29.8	68.1	2.1	0		25	25	50	0		8.1	78.4	13.5	0		39.1	4.3	56.5	0		
Total %	12.6	28.8	0.9	0	42.3	0.9	0.9	1.8	0	3.6	2.7	26.1	4.5	0	33.3	8.1	0.9	11.7	0	20.7	

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	1	3	0	4	0	0	0	0	**1**	1	0	2	**3**	0	0	**3**	9
11:15 AM	1	**5**	0	**6**	0	0	0	0	0	**3**	0	3	0	0	**1**	1	**10**
11:30 AM	**2**	2	0	4	0	0	0	0	0	2	0	2	2	0	1	3	9
11:45 AM	1	1	**1**	3	0	0	0	0	0	2	**2**	**4**	0	0	0	0	7
Total Volume	5	11	1	17	0	0	0	0	1	8	2	11	5	0	2	7	35
% App. Total	29.4	64.7	5.9		0	0	0		9.1	72.7	18.2		71.4	0	28.6		
PHF	.625	.550	.250	.708	.000	.000	.000	.000	.250	.667	.250	.688	.417	.000	.500	.583	.875

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Groups Printed- Bicycles on Crosswalk

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:00 AM																	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Pedestrians

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:00 AM																	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Car - Truck

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	82	143	5	0	230	8	11	11	0	30	15	111	51	0	177	65	13	98	0	176	613
10:15 AM	74	151	7	1	233	6	5	7	0	18	9	125	59	0	193	78	12	90	0	180	624
10:30 AM	76	182	15	2	275	7	16	9	0	32	11	105	45	1	162	95	19	97	0	211	680
10:45 AM	101	180	6	1	288	8	4	10	0	22	14	136	56	3	209	92	1	84	0	177	696
Total	333	656	33	4	1026	29	36	37	0	102	49	477	211	4	741	330	45	369	0	744	2613
11:00 AM	86	182	7	1	276	4	6	4	0	14	8	111	56	1	176	106	4	87	2	199	665
11:15 AM	78	158	6	2	244	7	3	6	0	16	7	148	53	2	210	72	11	83	0	166	636
11:30 AM	79	171	5	0	255	8	11	11	0	30	9	138	65	1	213	93	9	88	1	191	689
11:45 AM	105	206	11	0	322	8	6	3	0	17	4	176	74	1	255	97	12	89	0	198	792
Total	348	717	29	3	1097	27	26	24	0	77	28	573	248	5	854	368	36	347	3	754	2782
12:00 PM	85	169	15	3	272	12	4	13	0	29	12	155	64	1	232	90	6	81	0	177	710
12:15 PM	71	196	8	1	276	12	4	9	0	25	11	178	47	2	238	72	13	69	0	154	693
12:30 PM	87	197	3	0	287	7	10	11	0	28	9	137	45	1	192	125	8	87	0	220	727
12:45 PM	73	203	3	1	280	5	12	13	0	30	10	154	62	1	227	91	21	89	0	201	738
Total	316	765	29	5	1115	36	30	46	0	112	42	624	218	5	889	378	48	326	0	752	2868
01:00 PM	82	177	2	1	262	3	5	10	0	18	14	181	58	2	255	98	9	107	0	214	749
01:15 PM	83	175	6	2	266	5	8	15	0	28	10	191	63	2	266	100	13	96	0	209	769
01:30 PM	103	189	6	3	301	11	6	13	0	30	5	176	53	0	234	74	11	75	0	160	725
01:45 PM	87	179	10	0	276	6	9	7	0	22	9	171	58	2	240	78	10	69	0	157	695
Total	355	720	24	6	1105	25	28	45	0	98	38	719	232	6	995	350	43	347	0	740	2938
Grand Total	1352	2858	115	18	4343	117	120	152	0	389	157	2393	909	20	3479	1426	172	1389	3	2990	11201
Apprch %	31.1	65.8	2.6	0.4		30.1	30.8	39.1	0		4.5	68.8	26.1	0.6		47.7	5.8	46.5	0.1		
Total %	12.1	25.5	1	0.2	38.8	1	1.1	1.4	0	3.5	1.4	21.4	8.1	0.2	31.1	12.7	1.5	12.4	0	26.7	
Car	1338	2826	114	18	4296	116	119	150	0	385	154	2364	904	20	3442	1417	171	1376	3	2967	11090
% Car	99	98.9	99.1	100	98.9	99.1	99.2	98.7	0	99	98.1	98.8	99.4	100	98.9	99.4	99.4	99.1	100	99.2	99
Truck	14	32	1	0	47	1	1	2	0	4	3	29	5	0	37	9	1	13	0	23	111
% Truck	1	1.1	0.9	0	1.1	0.9	0.8	1.3	0	1	1.9	1.2	0.6	0	1.1	0.6	0.6	0.9	0	0.8	1

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:30 PM																	
12:30 PM	**87**	197	3	**287**	**7**	10	11	28	9	137	45	191	**125**	8	87	**220**	726
12:45 PM	73	**203**	3	279	5	**12**	13	**30**	10	154	62	226	91	**21**	89	201	736
01:00 PM	82	177	2	261	3	5	10	18	**14**	181	58	253	98	9	**107**	214	746
01:15 PM	83	175	**6**	264	5	8	**15**	28	10	**191**	**63**	**264**	100	13	96	209	**765**
Total Volume	325	752	14	1091	20	35	49	104	43	663	228	934	414	51	379	844	2973
% App. Total	29.8	68.9	1.3		19.2	33.7	47.1		4.6	71	24.4		49.1	6	44.9		
PHF	.934	.926	.583	.950	.714	.729	.817	.867	.768	.868	.905	.884	.828	.607	.886	.959	.972

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Groups Printed- Car

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	90	145	11	0	246	7	8	9	0	24	11	154	46	0	211	64	4	64	0	132	613
04:15 PM	86	157	12	1	256	8	11	9	0	28	9	177	63	0	249	50	16	76	0	142	675
04:30 PM	101	155	11	0	267	7	9	13	0	29	9	169	63	0	241	62	1	55	0	118	655
04:45 PM	106	152	12	0	270	8	8	12	0	28	10	174	55	2	241	65	7	80	0	152	691
Total	383	609	46	1	1039	30	36	43	0	109	39	674	227	2	942	241	28	275	0	544	2634
05:00 PM	110	173	9	1	293	8	9	7	0	24	11	190	83	3	287	61	9	80	1	151	755
05:15 PM	152	181	9	2	344	6	14	8	0	28	6	185	131	2	324	59	9	81	0	149	845
05:30 PM	118	154	7	0	279	9	7	12	0	28	10	153	97	0	260	68	13	103	1	185	752
05:45 PM	96	158	8	0	262	3	7	12	0	22	5	127	53	4	189	48	12	68	0	128	601
Total	476	666	33	3	1178	26	37	39	0	102	32	655	364	9	1060	236	43	332	2	613	2953
Grand Total	859	1275	79	4	2217	56	73	82	0	211	71	1329	591	11	2002	477	71	607	2	1157	5587
Apprch %	38.7	57.5	3.6	0.2		26.5	34.6	38.9	0		3.5	66.4	29.5	0.5		41.2	6.1	52.5	0.2		
Total %	15.4	22.8	1.4	0.1	39.7	1	1.3	1.5	0	3.8	1.3	23.8	10.6	0.2	35.8	8.5	1.3	10.9	0	20.7	

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	106	152	**12**	270	8	8	**12**	**28**	10	174	55	239	65	7	80	152	689
05:00 PM	110	173	9	292	8	9	7	24	**11**	**190**	83	284	61	9	80	150	750
05:15 PM	**152**	**181**	9	**342**	6	**14**	8	28	6	185	**131**	**322**	59	9	81	149	**841**
05:30 PM	118	154	7	279	**9**	7	12	28	10	153	97	260	**68**	**13**	**103**	**184**	751
Total Volume	486	660	37	1183	31	38	39	108	37	702	366	1105	253	38	344	635	3031
% App. Total	41.1	55.8	3.1		28.7	35.2	36.1		3.3	63.5	33.1		39.8	6	54.2		
PHF	.799	.912	.771	.865	.861	.679	.813	.964	.841	.924	.698	.858	.930	.731	.835	.863	.901

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Groups Printed- Truck

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	2	9	0	0	11	0	0	0	0	0	0	2	2	0	4	4	0	4	0	8	23
04:15 PM	2	9	0	0	11	0	0	0	0	0	1	1	3	0	5	0	1	3	0	4	20
04:30 PM	3	2	0	0	5	0	0	0	0	0	1	1	6	0	8	2	0	4	0	6	19
04:45 PM	2	2	0	0	4	0	0	0	0	0	0	4	7	0	11	1	0	2	0	3	18
Total	9	22	0	0	31	0	0	0	0	0	2	8	18	0	28	7	1	13	0	21	80
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	5	0	7	0	0	3	0	3	10
05:15 PM	3	2	0	0	5	0	0	0	0	0	0	0	4	0	4	0	0	1	0	1	10
05:30 PM	2	0	0	0	2	1	0	0	0	1	0	3	3	0	6	0	0	0	0	0	9
05:45 PM	1	2	0	0	3	0	0	0	0	0	0	0	2	0	2	0	1	1	0	2	7
Total	6	4	0	0	10	1	0	0	0	1	0	5	14	0	19	0	1	5	0	6	36
Grand Total	15	26	0	0	41	1	0	0	0	1	2	13	32	0	47	7	2	18	0	27	116
Apprch %	36.6	63.4	0	0		100	0	0	0		4.3	27.7	68.1	0		25.9	7.4	66.7	0		
Total %	12.9	22.4	0	0	35.3	0.9	0	0	0	0.9	1.7	11.2	27.6	0	40.5	6	1.7	15.5	0	23.3	

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	**9**	0	**11**	0	0	0	0	0	2	2	4	**4**	0	**4**	**8**	**23**
04:15 PM	2	9	0	11	0	0	0	0	**1**	1	3	5	0	**1**	3	4	20
04:30 PM	**3**	2	0	5	0	0	0	0	1	1	6	8	2	0	4	6	19
04:45 PM	2	2	0	4	0	0	0	0	0	**4**	**7**	**11**	1	0	2	3	18
Total Volume	9	22	0	31	0	0	0	0	2	8	18	28	7	1	13	21	80
% App. Total	29	71	0		0	0	0		7.1	28.6	64.3		33.3	4.8	61.9		
PHF	.750	.611	.000	.705	.000	.000	.000	.000	.500	.500	.643	.636	.438	.250	.813	.656	.870

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Groups Printed- Bicycles on Crosswalk

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Pedestrians

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Car - Truck

	US 60 Southbound					Centerville Rd. Westbound					US 60 Northbound					Centerville Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	92	154	11	0	257	7	8	9	0	24	11	156	48	0	215	68	4	68	0	140	636
04:15 PM	88	166	12	1	267	8	11	9	0	28	10	178	66	0	254	50	17	79	0	146	695
04:30 PM	104	157	11	0	272	7	9	13	0	29	10	170	69	0	249	64	1	59	0	124	674
04:45 PM	108	154	12	0	274	8	8	12	0	28	10	178	62	2	252	66	7	82	0	155	709
Total	392	631	46	1	1070	30	36	43	0	109	41	682	245	2	970	248	29	288	0	565	2714
05:00 PM	110	173	9	1	293	8	9	7	0	24	11	192	88	3	294	61	9	83	1	154	765
05:15 PM	155	183	9	2	349	6	14	8	0	28	6	185	135	2	328	59	9	82	0	150	855
05:30 PM	120	154	7	0	281	10	7	12	0	29	10	156	100	0	266	68	13	103	1	185	761
05:45 PM	97	160	8	0	265	3	7	12	0	22	5	127	55	4	191	48	13	69	0	130	608
Total	482	670	33	3	1188	27	37	39	0	103	32	660	378	9	1079	236	44	337	2	619	2989
Grand Total	874	1301	79	4	2258	57	73	82	0	212	73	1342	623	11	2049	484	73	625	2	1184	5703
Apprch %	38.7	57.6	3.5	0.2		26.9	34.4	38.7	0		3.6	65.5	30.4	0.5		40.9	6.2	52.8	0.2		
Total %	15.3	22.8	1.4	0.1	39.6	1	1.3	1.4	0	3.7	1.3	23.5	10.9	0.2	35.9	8.5	1.3	11	0	20.8	
Car	859	1275	79	4	2217	56	73	82	0	211	71	1329	591	11	2002	477	71	607	2	1157	5587
% Car	98.3	98	100	100	98.2	98.2	100	100	0	99.5	97.3	99	94.9	100	97.7	98.6	97.3	97.1	100	97.7	98
Truck	15	26	0	0	41	1	0	0	0	1	2	13	32	0	47	7	2	18	0	27	116
% Truck	1.7	2	0	0	1.8	1.8	0	0	0	0.5	2.7	1	5.1	0	2.3	1.4	2.7	2.9	0	2.3	2

	US 60 Southbound				Centerville Rd. Westbound				US 60 Northbound				Centerville Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	108	154	**12**	274	8	8	**12**	28	10	178	62	250	66	7	82	155	707
05:00 PM	110	173	9	292	8	9	7	24	**11**	**192**	88	291	61	9	83	153	760
05:15 PM	**155**	**183**	9	**347**	6	**14**	8	28	6	185	**135**	**326**	59	9	82	150	**851**
05:30 PM	120	154	7	281	**10**	7	12	**29**	10	156	100	266	**68**	**13**	**103**	**184**	760
Total Volume	493	664	37	1194	32	38	39	109	37	711	385	1133	254	38	350	642	3078
% App. Total	41.3	55.6	3.1		29.4	34.9	35.8		3.3	62.8	34		39.6	5.9	54.5		
PHF	.795	.907	.771	.860	.800	.679	.813	.940	.841	.926	.713	.869	.934	.731	.850	.872	.904

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Groups Printed- Car

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	48	189	0	237	132	5	1	138	82	43	0	125	500
10:15 AM	54	180	1	235	139	9	1	149	69	49	0	118	502
10:30 AM	77	209	1	287	140	16	0	156	63	38	0	101	544
10:45 AM	84	201	0	285	167	8	1	176	64	33	0	97	558
Total	263	779	2	1044	578	38	3	619	278	163	0	441	2104
11:00 AM	80	201	0	281	140	7	0	147	60	30	0	90	518
11:15 AM	64	165	1	230	162	12	2	176	57	39	0	96	502
11:30 AM	73	205	0	278	158	5	2	165	72	56	0	128	571
11:45 AM	77	201	3	281	201	5	0	206	73	39	0	112	599
Total	294	772	4	1070	661	29	4	694	262	164	0	426	2190
12:00 PM	88	191	1	280	188	7	1	196	101	42	0	143	619
12:15 PM	78	190	0	268	184	4	2	190	86	53	0	139	597
12:30 PM	97	220	1	318	162	17	1	180	106	37	0	143	641
12:45 PM	66	260	2	328	159	5	3	167	89	52	0	141	636
Total	329	861	4	1194	693	33	7	733	382	184	0	566	2493
01:00 PM	77	206	0	283	205	15	1	221	78	48	0	126	630
01:15 PM	75	219	1	295	230	10	1	241	103	53	0	156	692
01:30 PM	69	199	4	272	187	11	2	200	90	29	0	119	591
01:45 PM	62	197	0	259	190	13	1	204	80	42	0	122	585
Total	283	821	5	1109	812	49	5	866	351	172	0	523	2498
Grand Total	1169	3233	15	4417	2744	149	19	2912	1273	683	0	1956	9285
Apprch %	26.5	73.2	0.3		94.2	5.1	0.7		65.1	34.9	0		
Total %	12.6	34.8	0.2	47.6	29.6	1.6	0.2	31.4	13.7	7.4	0	21.1	

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:30 PM										
12:30 PM	**97**	220	317	162	**17**	179	**106**	37	143	639
12:45 PM	66	**260**	**326**	159	5	164	89	52	141	631
01:00 PM	77	206	283	205	15	220	78	48	126	629
01:15 PM	75	219	294	**230**	10	**240**	103	**53**	**156**	**690**
Total Volume	315	905	1220	756	47	803	376	190	566	2589
% App. Total	25.8	74.2		94.1	5.9		66.4	33.6		
PHF	.812	.870	.936	.822	.691	.836	.887	.896	.907	.938

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File Name : 3-US 60 and Rt. 199 SB Ramps SAT
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Groups Printed- Truck

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	2	0	2	2	0	0	2	0	3	0	3	7
10:15 AM	0	3	0	3	2	0	0	2	1	1	0	2	7
10:30 AM	1	2	0	3	1	1	0	2	4	0	0	4	9
10:45 AM	1	1	0	2	1	0	0	1	0	0	0	0	3
Total	2	8	0	10	6	1	0	7	5	4	0	9	26
11:00 AM	3	3	0	6	2	1	0	3	1	0	0	1	10
11:15 AM	1	3	0	4	4	0	0	4	1	0	0	1	9
11:30 AM	1	4	0	5	3	0	0	3	2	0	0	2	10
11:45 AM	0	1	0	1	4	0	0	4	2	1	0	3	8
Total	5	11	0	16	13	1	0	14	6	1	0	7	37
12:00 PM	0	1	0	1	0	0	0	0	1	2	0	3	4
12:15 PM	0	1	0	1	0	1	0	1	1	0	0	1	3
12:30 PM	0	3	0	3	2	0	0	2	2	0	0	2	7
12:45 PM	1	2	0	3	2	0	0	2	0	0	0	0	5
Total	1	7	0	8	4	1	0	5	4	2	0	6	19
01:00 PM	1	1	0	2	2	0	0	2	0	0	0	0	4
01:15 PM	0	3	0	3	4	0	0	4	1	0	0	1	8
01:30 PM	1	1	0	2	3	0	0	3	2	0	0	2	7
01:45 PM	1	1	0	2	1	0	0	1	2	0	0	2	5
Total	3	6	0	9	10	0	0	10	5	0	0	5	24
Grand Total	11	32	0	43	33	3	0	36	20	7	0	27	106
Apprch %	25.6	74.4	0		91.7	8.3	0		74.1	25.9	0		
Total %	10.4	30.2	0	40.6	31.1	2.8	0	34	18.9	6.6	0	25.5	

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:00 AM										
11:00 AM	**3**	3	**6**	2	**1**	3	1	0	1	**10**
11:15 AM	1	3	4	**4**	0	**4**	1	0	1	9
11:30 AM	1	**4**	5	3	0	3	**2**	0	2	10
11:45 AM	0	1	1	4	0	4	2	**1**	**3**	8
Total Volume	5	11	16	13	1	14	6	1	7	37
% App. Total	31.2	68.8		92.9	7.1		85.7	14.3		
PHF	.417	.688	.667	.813	.250	.875	.750	.250	.583	.925

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Groups Printed- Bicycles on Crosswalk

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 10:00 AM										
10:00 AM	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Pedestrians

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 10:00 AM										
10:00 AM	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Car - Truck

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	48	191	0	239	134	5	1	140	82	46	0	128	507
10:15 AM	54	183	1	238	141	9	1	151	70	50	0	120	509
10:30 AM	78	211	1	290	141	17	0	158	67	38	0	105	553
10:45 AM	85	202	0	287	168	8	1	177	64	33	0	97	561
Total	265	787	2	1054	584	39	3	626	283	167	0	450	2130
11:00 AM	83	204	0	287	142	8	0	150	61	30	0	91	528
11:15 AM	65	168	1	234	166	12	2	180	58	39	0	97	511
11:30 AM	74	209	0	283	161	5	2	168	74	56	0	130	581
11:45 AM	77	202	3	282	205	5	0	210	75	40	0	115	607
Total	299	783	4	1086	674	30	4	708	268	165	0	433	2227
12:00 PM	88	192	1	281	188	7	1	196	102	44	0	146	623
12:15 PM	78	191	0	269	184	5	2	191	87	53	0	140	600
12:30 PM	97	223	1	321	164	17	1	182	108	37	0	145	648
12:45 PM	67	262	2	331	161	5	3	169	89	52	0	141	641
Total	330	868	4	1202	697	34	7	738	386	186	0	572	2512
01:00 PM	78	207	0	285	207	15	1	223	78	48	0	126	634
01:15 PM	75	222	1	298	234	10	1	245	104	53	0	157	700
01:30 PM	70	200	4	274	190	11	2	203	92	29	0	121	598
01:45 PM	63	198	0	261	191	13	1	205	82	42	0	124	590
Total	286	827	5	1118	822	49	5	876	356	172	0	528	2522
Grand Total	1180	3265	15	4460	2777	152	19	2948	1293	690	0	1983	9391
Apprch %	26.5	73.2	0.3		94.2	5.2	0.6		65.2	34.8	0		
Total %	12.6	34.8	0.2	47.5	29.6	1.6	0.2	31.4	13.8	7.3	0	21.1	
Car	1169	3233	15	4417	2744	149	19	2912	1273	683	0	1956	9285
% Car	99.1	99	100	99	98.8	98	100	98.8	98.5	99	0	98.6	98.9
Truck	11	32	0	43	33	3	0	36	20	7	0	27	106
% Truck	0.9	1	0	1	1.2	2	0	1.2	1.5	1	0	1.4	1.1

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:30 PM										
12:30 PM	**97**	223	320	164	**17**	181	**108**	37	145	646
12:45 PM	67	**262**	**329**	161	5	166	89	52	141	636
01:00 PM	78	207	285	207	15	222	78	48	126	633
01:15 PM	75	222	297	**234**	10	**244**	104	**53**	**157**	**698**
Total Volume	317	914	1231	766	47	813	379	190	569	2613
% App. Total	25.8	74.2		94.2	5.8		66.6	33.4		
PHF	.817	.872	.935	.818	.691	.833	.877	.896	.906	.936

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Groups Printed- Car

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	64	154	0	218	194	7	1	202	46	29	0	75	495
04:15 PM	57	139	1	197	190	6	1	197	44	40	0	84	478
04:30 PM	73	159	0	232	202	4	2	208	60	43	0	103	543
04:45 PM	65	150	0	215	207	5	0	212	51	39	0	90	517
Total	259	602	1	862	793	22	4	819	201	151	0	352	2033
05:00 PM	92	151	0	243	237	8	0	245	47	53	0	100	588
05:15 PM	85	162	1	248	264	11	1	276	55	80	0	135	659
05:30 PM	75	157	1	233	189	15	0	204	42	47	0	89	526
05:45 PM	59	150	0	209	149	7	0	156	47	39	0	86	451
Total	311	620	2	933	839	41	1	881	191	219	0	410	2224
Grand Total	570	1222	3	1795	1632	63	5	1700	392	370	0	762	4257
Apprch %	31.8	68.1	0.2		96	3.7	0.3		51.4	48.6	0		
Total %	13.4	28.7	0.1	42.2	38.3	1.5	0.1	39.9	9.2	8.7	0	17.9	

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	73	159	232	202	4	206	**60**	43	103	541
04:45 PM	65	150	215	207	5	212	51	39	90	517
05:00 PM	**92**	151	243	237	8	245	47	53	100	588
05:15 PM	85	**162**	**247**	**264**	**11**	**275**	55	**80**	**135**	**657**
Total Volume	315	622	937	910	28	938	213	215	428	2303
% App. Total	33.6	66.4		97	3		49.8	50.2		
PHF	.856	.960	.948	.862	.636	.853	.888	.672	.793	.876

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Groups Printed- Truck

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	12	0	12	2	0	0	2	1	3	0	4	18
04:15 PM	0	9	0	9	3	0	0	3	1	2	0	3	15
04:30 PM	0	4	0	4	6	0	0	6	2	2	0	4	14
04:45 PM	1	2	0	3	11	0	0	11	0	0	0	0	14
Total	1	27	0	28	22	0	0	22	4	7	0	11	61
05:00 PM	0	0	0	0	8	0	0	8	2	1	0	3	11
05:15 PM	0	2	0	2	3	0	0	3	0	3	0	3	8
05:30 PM	0	0	0	0	3	0	0	3	2	1	0	3	6
05:45 PM	1	1	0	2	1	0	0	1	0	1	0	1	4
Total	1	3	0	4	15	0	0	15	4	6	0	10	29
Grand Total	2	30	0	32	37	0	0	37	8	13	0	21	90
Apprch %	6.2	93.8	0		100	0	0		38.1	61.9	0		
Total %	2.2	33.3	0	35.6	41.1	0	0	41.1	8.9	14.4	0	23.3	

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	**12**	**12**	2	0	2	1	**3**	**4**	**18**
04:15 PM	0	9	9	3	0	3	1	2	3	15
04:30 PM	0	4	4	6	0	6	**2**	2	4	14
04:45 PM	**1**	2	3	**11**	0	**11**	0	0	0	14
Total Volume	1	27	28	22	0	22	4	7	11	61
% App. Total	3.6	96.4		100	0		36.4	63.6		
PHF	.250	.563	.583	.500	.000	.500	.500	.583	.688	.847

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Groups Printed- Bicycles on Crosswalk

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Site Code :
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Groups Printed- Pedestrians

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Car - Truck

	US 60 Southbound				US 60 Northbound				Rt. 199 SB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	64	166	0	230	196	7	1	204	47	32	0	79	513
04:15 PM	57	148	1	206	193	6	1	200	45	42	0	87	493
04:30 PM	73	163	0	236	208	4	2	214	62	45	0	107	557
04:45 PM	66	152	0	218	218	5	0	223	51	39	0	90	531
Total	260	629	1	890	815	22	4	841	205	158	0	363	2094
05:00 PM	92	151	0	243	245	8	0	253	49	54	0	103	599
05:15 PM	85	164	1	250	267	11	1	279	55	83	0	138	667
05:30 PM	75	157	1	233	192	15	0	207	44	48	0	92	532
05:45 PM	60	151	0	211	150	7	0	157	47	40	0	87	455
Total	312	623	2	937	854	41	1	896	195	225	0	420	2253
Grand Total	572	1252	3	1827	1669	63	5	1737	400	383	0	783	4347
Apprch %	31.3	68.5	0.2		96.1	3.6	0.3		51.1	48.9	0		
Total %	13.2	28.8	0.1	42	38.4	1.4	0.1	40	9.2	8.8	0	18	
Car	570	1222	3	1795	1632	63	5	1700	392	370	0	762	4257
% Car	99.7	97.6	100	98.2	97.8	100	100	97.9	98	96.6	0	97.3	97.9
Truck	2	30	0	32	37	0	0	37	8	13	0	21	90
% Truck	0.3	2.4	0	1.8	2.2	0	0	2.1	2	3.4	0	2.7	2.1

	US 60 Southbound			US 60 Northbound			Rt. 199 SB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	73	163	236	208	4	212	**62**	45	107	555
04:45 PM	66	152	218	218	5	223	51	39	90	531
05:00 PM	**92**	151	243	245	8	253	49	54	103	599
05:15 PM	85	**164**	**249**	**267**	**11**	**278**	55	**83**	**138**	**665**
Total Volume	316	630	946	938	28	966	217	221	438	2350
% App. Total	33.4	66.6		97.1	2.9		49.5	50.5		
PHF	.859	.960	.950	.878	.636	.869	.875	.666	.793	.883

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Groups Printed- Car

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	62	205	2	269	90	33	1	124	18	43	1	62	455
10:15 AM	64	189	0	253	93	33	4	130	20	50	0	70	453
10:30 AM	66	204	1	271	128	47	1	176	16	43	0	59	506
10:45 AM	72	195	2	269	104	31	0	135	18	58	0	76	480
Total	264	793	5	1062	415	144	6	565	72	194	1	267	1894
11:00 AM	55	203	2	260	95	34	1	130	17	56	0	73	463
11:15 AM	51	174	1	226	107	33	0	140	17	63	0	80	446
11:30 AM	47	220	2	269	115	55	0	170	13	52	0	65	504
11:45 AM	54	229	0	283	135	29	1	165	17	69	1	87	535
Total	207	826	5	1038	452	151	2	605	64	240	1	305	1948
12:00 PM	53	225	3	281	144	41	0	185	17	58	0	75	541
12:15 PM	50	237	0	287	123	39	1	163	9	60	1	70	520
12:30 PM	76	271	4	351	106	46	0	152	21	69	0	90	593
12:45 PM	60	266	1	327	104	47	0	151	26	63	0	89	567
Total	239	999	8	1246	477	173	1	651	73	250	1	324	2221
01:00 PM	58	220	1	279	155	55	0	210	23	74	0	97	586
01:15 PM	75	253	2	330	157	55	0	212	19	73	0	92	634
01:30 PM	68	229	0	297	142	52	3	197	15	62	1	78	572
01:45 PM	64	204	1	269	137	43	1	181	18	74	0	92	542
Total	265	906	4	1175	591	205	4	800	75	283	1	359	2334
Grand Total	975	3524	22	4521	1935	673	13	2621	284	967	4	1255	8397
Apprch %	21.6	77.9	0.5		73.8	25.7	0.5		22.6	77.1	0.3		
Total %	11.6	42	0.3	53.8	23	8	0.2	31.2	3.4	11.5	0	14.9	

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:30 PM										
12:30 PM	**76**	**271**	**347**	106	46	152	21	69	90	589
12:45 PM	60	266	326	104	47	151	**26**	63	89	566
01:00 PM	58	220	278	155	**55**	210	23	**74**	**97**	585
01:15 PM	75	253	328	**157**	55	**212**	19	73	92	**632**
Total Volume	269	1010	1279	522	203	725	89	279	368	2372
% App. Total	21	79		72	28		24.2	75.8		
PHF	.885	.932	.921	.831	.923	.855	.856	.943	.948	.938

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Groups Printed- Truck

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	2	0	2	1	6	0	7	0	0	0	0	9
10:15 AM	1	3	0	4	3	5	0	8	0	0	0	0	12
10:30 AM	0	6	0	6	2	0	0	2	1	0	0	1	9
10:45 AM	1	0	0	1	0	3	0	3	0	0	0	0	4
Total	2	11	0	13	6	14	0	20	1	0	0	1	34
11:00 AM	1	3	0	4	2	2	0	4	1	1	0	2	10
11:15 AM	1	3	0	4	4	2	0	6	1	0	0	1	11
11:30 AM	3	3	0	6	2	2	0	4	0	1	0	1	11
11:45 AM	0	3	0	3	2	4	0	6	0	2	0	2	11
Total	5	12	0	17	10	10	0	20	2	4	0	6	43
12:00 PM	1	1	0	2	0	4	0	4	0	0	0	0	6
12:15 PM	1	2	0	3	0	6	0	6	0	1	0	1	10
12:30 PM	0	2	0	2	1	3	0	4	0	1	0	1	7
12:45 PM	1	1	0	2	2	3	0	5	0	0	0	0	7
Total	3	6	0	9	3	16	0	19	0	2	0	2	30
01:00 PM	0	1	0	1	1	2	0	3	0	1	0	1	5
01:15 PM	3	1	0	4	3	3	0	6	0	1	0	1	11
01:30 PM	0	3	0	3	1	4	0	5	0	2	1	3	11
01:45 PM	0	3	0	3	0	5	0	5	0	1	0	1	9
Total	3	8	0	11	5	14	0	19	0	5	1	6	36
Grand Total	13	37	0	50	24	54	0	78	3	11	1	15	143
Apprch %	26	74	0		30.8	69.2	0		20	73.3	6.7		
Total %	9.1	25.9	0	35	16.8	37.8	0	54.5	2.1	7.7	0.7	10.5	

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:00 AM										
11:00 AM	1	**3**	4	2	2	4	**1**	1	**2**	10
11:15 AM	1	3	4	**4**	2	**6**	1	0	1	**11**
11:30 AM	**3**	3	**6**	2	2	4	0	1	1	11
11:45 AM	0	3	3	2	**4**	6	0	**2**	2	11
Total Volume	5	12	17	10	10	20	2	4	6	43
% App. Total	29.4	70.6		50	50		33.3	66.7		
PHF	.417	1.00	.708	.625	.625	.833	.500	.500	.750	.977

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Groups Printed- Bicycles on Crosswalk

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 10:00 AM										
10:00 AM	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Pedestrians

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 10:00 AM										
10:00 AM	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Car - Truck

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
10:00 AM	62	207	2	271	91	39	1	131	18	43	1	62	464
10:15 AM	65	192	0	257	96	38	4	138	20	50	0	70	465
10:30 AM	66	210	1	277	130	47	1	178	17	43	0	60	515
10:45 AM	73	195	2	270	104	34	0	138	18	58	0	76	484
Total	266	804	5	1075	421	158	6	585	73	194	1	268	1928
11:00 AM	56	206	2	264	97	36	1	134	18	57	0	75	473
11:15 AM	52	177	1	230	111	35	0	146	18	63	0	81	457
11:30 AM	50	223	2	275	117	57	0	174	13	53	0	66	515
11:45 AM	54	232	0	286	137	33	1	171	17	71	1	89	546
Total	212	838	5	1055	462	161	2	625	66	244	1	311	1991
12:00 PM	54	226	3	283	144	45	0	189	17	58	0	75	547
12:15 PM	51	239	0	290	123	45	1	169	9	61	1	71	530
12:30 PM	76	273	4	353	107	49	0	156	21	70	0	91	600
12:45 PM	61	267	1	329	106	50	0	156	26	63	0	89	574
Total	242	1005	8	1255	480	189	1	670	73	252	1	326	2251
01:00 PM	58	221	1	280	156	57	0	213	23	75	0	98	591
01:15 PM	78	254	2	334	160	58	0	218	19	74	0	93	645
01:30 PM	68	232	0	300	143	56	3	202	15	64	2	81	583
01:45 PM	64	207	1	272	137	48	1	186	18	75	0	93	551
Total	268	914	4	1186	596	219	4	819	75	288	2	365	2370
Grand Total	988	3561	22	4571	1959	727	13	2699	287	978	5	1270	8540
Apprch %	21.6	77.9	0.5		72.6	26.9	0.5		22.6	77	0.4		
Total %	11.6	41.7	0.3	53.5	22.9	8.5	0.2	31.6	3.4	11.5	0.1	14.9	
Car	975	3524	22	4521	1935	673	13	2621	284	967	4	1255	8397
% Car	98.7	99	100	98.9	98.8	92.6	100	97.1	99	98.9	80	98.8	98.3
Truck	13	37	0	50	24	54	0	78	3	11	1	15	143
% Truck	1.3	1	0	1.1	1.2	7.4	0	2.9	1	1.1	20	1.2	1.7

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:30 PM										
12:30 PM	76	**273**	**349**	107	49	156	21	70	91	596
12:45 PM	61	267	328	106	50	156	**26**	63	89	573
01:00 PM	58	221	279	156	57	213	23	**75**	**98**	590
01:15 PM	**78**	254	332	**160**	**58**	**218**	19	74	93	**643**
Total Volume	273	1015	1288	529	214	743	89	282	371	2402
% App. Total	21.2	78.8		71.2	28.8		24	76		
PHF	.875	.929	.923	.827	.922	.852	.856	.940	.946	.934

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Groups Printed- Car

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	49	153	2	204	123	41	0	164	17	75	1	93	461
04:15 PM	34	150	0	184	116	36	0	152	12	81	2	95	431
04:30 PM	35	186	0	221	122	28	1	151	23	77	1	101	473
04:45 PM	43	145	1	189	128	39	0	167	13	89	0	102	458
Total	161	634	3	798	489	144	1	634	65	322	4	391	1823
05:00 PM	48	155	2	205	132	47	0	179	25	104	0	129	513
05:15 PM	37	176	1	214	169	32	1	202	15	105	0	120	536
05:30 PM	43	155	0	198	121	43	0	164	16	65	0	81	443
05:45 PM	34	170	0	204	92	31	0	123	18	77	0	95	422
Total	162	656	3	821	514	153	1	668	74	351	0	425	1914
Grand Total	323	1290	6	1619	1003	297	2	1302	139	673	4	816	3737
Apprch %	20	79.7	0.4		77	22.8	0.2		17	82.5	0.5		
Total %	8.6	34.5	0.2	43.3	26.8	7.9	0.1	34.8	3.7	18	0.1	21.8	

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	35	**186**	**221**	122	28	150	23	77	100	471
04:45 PM	43	145	188	128	39	167	13	89	102	457
05:00 PM	**48**	155	203	132	**47**	179	**25**	104	**129**	511
05:15 PM	37	176	213	**169**	32	**201**	15	**105**	120	**534**
Total Volume	163	662	825	551	146	697	76	375	451	1973
% App. Total	19.8	80.2		79.1	20.9		16.9	83.1		
PHF	.849	.890	.933	.815	.777	.867	.760	.893	.874	.924

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File Name : 4-US 60 and Rt. 199 NB Ramps THU
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Groups Printed- Truck

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	3	8	1	12	1	2	0	3	1	1	0	2	17
04:15 PM	3	7	0	10	2	0	0	2	0	1	0	1	13
04:30 PM	2	4	0	6	3	3	0	6	0	3	0	3	15
04:45 PM	0	2	0	2	7	2	0	9	0	5	0	5	16
Total	8	21	1	30	13	7	0	20	1	10	0	11	61
05:00 PM	0	2	0	2	3	0	0	3	0	3	0	3	8
05:15 PM	1	1	0	2	2	1	0	3	0	1	0	1	6
05:30 PM	0	2	0	2	2	3	0	5	0	1	0	1	8
05:45 PM	1	0	0	1	1	0	0	1	0	1	0	1	3
Total	2	5	0	7	8	4	0	12	0	6	0	6	25
Grand Total	10	26	1	37	21	11	0	32	1	16	0	17	86
Apprch %	27	70.3	2.7		65.6	34.4	0		5.9	94.1	0		
Total %	11.6	30.2	1.2	43	24.4	12.8	0	37.2	1.2	18.6	0	19.8	

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**3**	**8**	**11**	1	2	3	**1**	1	2	**16**
04:15 PM	3	7	10	2	0	2	0	1	1	13
04:30 PM	2	4	6	3	**3**	6	0	3	3	15
04:45 PM	0	2	2	**7**	2	**9**	0	**5**	**5**	16
Total Volume	8	21	29	13	7	20	1	10	11	60
% App. Total	27.6	72.4		65	35		9.1	90.9		
PHF	.667	.656	.659	.464	.583	.556	.250	.500	.550	.938

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File Name : 4-US 60 and Rt. 199 NB Ramps THU
Site Code :
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Groups Printed- Bicycles on Crosswalk

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : 4-US 60 and Rt. 199 NB Ramps THU
Site Code :
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Groups Printed- Pedestrians

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	0	0	0	0	1	1	1
Grand Total	0	0	0	0	0	0	0	0	0	0	1	1	1
Apprch %	0	0	0		0	0	0		0	0	100		
Total %	0	0	0	0	0	0	0	0	0	0	100	100	

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : 4-US 60 and Rt. 199 NB Ramps THU
Site Code :
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Groups Printed- Car - Truck

	US 60 Southbound				US 60 Northbound				Rt. 199 NB Ramps Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	52	161	3	216	124	43	0	167	18	76	1	95	478
04:15 PM	37	157	0	194	118	36	0	154	12	82	2	96	444
04:30 PM	37	190	0	227	125	31	1	157	23	80	1	104	488
04:45 PM	43	147	1	191	135	41	0	176	13	94	0	107	474
Total	169	655	4	828	502	151	1	654	66	332	4	402	1884
05:00 PM	48	157	2	207	135	47	0	182	25	107	0	132	521
05:15 PM	38	177	1	216	171	33	1	205	15	106	0	121	542
05:30 PM	43	157	0	200	123	46	0	169	16	66	0	82	451
05:45 PM	35	170	0	205	93	31	0	124	18	78	0	96	425
Total	164	661	3	828	522	157	1	680	74	357	0	431	1939
Grand Total	333	1316	7	1656	1024	308	2	1334	140	689	4	833	3823
Apprch %	20.1	79.5	0.4		76.8	23.1	0.1		16.8	82.7	0.5		
Total %	8.7	34.4	0.2	43.3	26.8	8.1	0.1	34.9	3.7	18	0.1	21.8	
Car	323	1290	6	1619	1003	297	2	1302	139	673	4	816	3737
% Car	97	98	85.7	97.8	97.9	96.4	100	97.6	99.3	97.7	100	98	97.8
Truck	10	26	1	37	21	11	0	32	1	16	0	17	86
% Truck	3	2	14.3	2.2	2.1	3.6	0	2.4	0.7	2.3	0	2	2.2

	US 60 Southbound			US 60 Northbound			Rt. 199 NB Ramps Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	37	**190**	**227**	125	31	156	23	80	103	486
04:45 PM	43	147	190	135	41	176	13	94	107	473
05:00 PM	**48**	157	205	135	**47**	182	**25**	**107**	**132**	519
05:15 PM	38	177	215	**171**	33	**204**	15	106	121	**540**
Total Volume	166	671	837	566	152	718	76	387	463	2018
% App. Total	19.8	80.2		78.8	21.2		16.4	83.6		
PHF	.865	.883	.922	.827	.809	.880	.760	.904	.877	.934

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File Name : 5-Longhill Gate_Warhill Trail and Longhill Rd. SAT
Site Code :
Start Date : 5/14/2016

Groups Printed- Car

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	28	2	64	0	94	69	59	1	0	129	8	1	1	0	10	1	86	30	0	117	350
10:15 AM	46	3	48	0	97	108	82	3	0	193	8	0	0	0	8	1	116	39	0	156	454
10:30 AM	45	1	52	0	98	78	104	4	0	186	6	0	2	0	8	2	94	26	0	122	414
10:45 AM	51	2	69	0	122	89	86	0	0	175	3	0	1	0	4	3	95	31	0	129	430
Total	170	8	233	0	411	344	331	8	0	683	25	1	4	0	30	7	391	126	0	524	1648
11:00 AM	26	1	47	1	75	69	108	7	0	184	5	1	0	0	6	0	85	32	0	117	382
11:15 AM	33	2	56	0	91	64	81	2	0	147	9	0	2	0	11	2	108	25	0	135	384
11:30 AM	33	5	61	0	99	65	92	6	0	163	11	0	0	0	11	3	118	12	0	133	406
11:45 AM	41	3	60	0	104	51	81	6	0	138	9	1	3	0	13	0	115	26	0	141	396
Total	133	11	224	1	369	249	362	21	0	632	34	2	5	0	41	5	426	95	0	526	1568
12:00 PM	38	5	53	0	96	79	89	8	0	176	15	0	1	0	16	1	106	24	0	131	419
12:15 PM	31	3	68	0	102	80	81	2	0	163	4	0	0	0	4	1	84	26	0	111	380
12:30 PM	49	2	97	0	148	74	86	3	0	163	10	0	2	0	12	1	92	19	0	112	435
12:45 PM	27	1	66	0	94	72	75	4	0	151	6	0	3	0	9	0	101	25	0	126	380
Total	145	11	284	0	440	305	331	17	0	653	35	0	6	0	41	3	383	94	0	480	1614
01:00 PM	47	4	58	0	109	71	96	2	0	169	7	0	3	0	10	4	90	24	0	118	406
01:15 PM	30	0	81	0	111	68	91	3	0	162	3	0	1	0	4	1	77	25	0	103	380
01:30 PM	23	2	60	0	85	42	80	3	0	125	10	0	1	0	11	2	62	15	0	79	300
01:45 PM	14	0	52	0	66	54	94	3	0	151	3	0	0	0	3	0	71	23	0	94	314
Total	114	6	251	0	371	235	361	11	0	607	23	0	5	0	28	7	300	87	0	394	1400
Grand Total	562	36	992	1	1591	1133	1385	57	0	2575	117	3	20	0	140	22	1500	402	0	1924	6230
Apprch %	35.3	2.3	62.4	0.1		44	53.8	2.2	0		83.6	2.1	14.3	0		1.1	78	20.9	0		
Total %	9	0.6	15.9	0	25.5	18.2	22.2	0.9	0	41.3	1.9	0	0.3	0	2.2	0.4	24.1	6.5	0	30.9	

	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:15 AM																	
10:15 AM	46	**3**	48	97	**108**	82	3	**193**	**8**	0	0	**8**	1	**116**	**39**	**156**	**454**
10:30 AM	45	1	52	98	78	104	4	186	6	0	**2**	8	2	94	26	122	414
10:45 AM	**51**	2	**69**	**122**	89	86	0	175	3	0	1	4	**3**	95	31	129	430
11:00 AM	26	1	47	74	69	**108**	**7**	184	5	**1**	0	6	0	85	32	117	381
Total Volume	168	7	216	391	344	380	14	738	22	1	3	26	6	390	128	524	1679
% App. Total	43	1.8	55.2		46.6	51.5	1.9		84.6	3.8	11.5		1.1	74.4	24.4		
PHF	.824	.583	.783	.801	.796	.880	.500	.956	.688	.250	.375	.813	.500	.841	.821	.840	.925

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 5-Longhill Gate_Warhill Trail and Longhill Rd. SAT
Site Code :
Start Date : 5/14/2016

Groups Printed- Truck

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
10:45 AM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	3	0	0	3	5
Total	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	5	0	0	5	9
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
11:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	0	1	0	0	1	4
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
Total	0	0	0	0	0	0	3	1	0	4	0	0	1	0	1	0	4	0	0	4	9
12:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
12:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
12:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Total	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	10
01:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
01:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	6
Grand Total	0	0	1	0	1	1	13	1	0	15	0	0	1	0	1	0	17	0	0	17	34
Apprch %	0	0	100	0		6.7	86.7	6.7	0		0	0	100	0		0	100	0	0		
Total %	0	0	2.9	0	2.9	2.9	38.2	2.9	0	44.1	0	0	2.9	0	2.9	0	50	0	0	50	

	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:45 AM																	
10:45 AM	0	0	0	0	**1**	1	0	**2**	0	0	0	0	0	**3**	0	**3**	**5**
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
11:15 AM	0	0	0	0	0	**2**	0	2	0	0	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	1	**1**	2	0	0	**1**	**1**	0	1	0	1	4
Total Volume	0	0	0	0	1	4	1	6	0	0	1	1	0	5	0	5	12
% App. Total	0	0	0		16.7	66.7	16.7		0	0	100		0	100	0		
PHF	.000	.000	.000	.000	.250	.500	.250	.750	.000	.000	.250	.250	.000	.417	.000	.417	.600

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File Name : 5-Longhill Gate_Warhill Trail and Longhill Rd. SAT
Site Code :
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Groups Printed- Bicycles on Crosswalk

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:00 AM																	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : 5-Longhill Gate_Warhill Trail and Longhill Rd. SAT
Site Code :
Start Date : 5/14/2016
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Groups Printed- Pedestrians

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Total	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	6
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	100		
Total %	0	0	0	83.3	83.3	0	0	0	0	0	0	0	0	0	0	0	0	0	16.7	16.7	

	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:00 AM																	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 5-Longhill Gate_Warhill Trail and Longhill Rd. SAT
Site Code :
Start Date : 5/14/2016

Groups Printed- Car - Truck

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
10:00 AM	28	2	64	0	94	69	59	1	0	129	8	1	1	0	10	1	86	30	0	117	350
10:15 AM	46	3	48	0	97	108	84	3	0	195	8	0	0	0	8	1	117	39	0	157	457
10:30 AM	45	1	52	0	98	78	104	4	0	186	6	0	2	0	8	2	95	26	0	123	415
10:45 AM	51	2	69	0	122	90	87	0	0	177	3	0	1	0	4	3	98	31	0	132	435
Total	170	8	233	0	411	345	334	8	0	687	25	1	4	0	30	7	396	126	0	529	1657
11:00 AM	26	1	47	1	75	69	108	7	0	184	5	1	0	0	6	0	86	32	0	118	383
11:15 AM	33	2	56	0	91	64	83	2	0	149	9	0	2	0	11	2	108	25	0	135	386
11:30 AM	33	5	61	0	99	65	93	7	0	165	11	0	1	0	12	3	119	12	0	134	410
11:45 AM	41	3	60	0	104	51	81	6	0	138	9	1	3	0	13	0	117	26	0	143	398
Total	133	11	224	1	369	249	365	22	0	636	34	2	6	0	42	5	430	95	0	530	1577
12:00 PM	38	5	53	0	96	79	90	8	0	177	15	0	1	0	16	1	106	24	0	131	420
12:15 PM	31	3	68	0	102	80	84	2	0	166	4	0	0	0	4	1	85	26	0	112	384
12:30 PM	49	2	98	0	149	74	86	3	0	163	10	0	2	0	12	1	93	19	0	113	437
12:45 PM	27	1	66	0	94	72	76	4	0	152	6	0	3	0	9	0	103	25	0	128	383
Total	145	11	285	0	441	305	336	17	0	658	35	0	6	0	41	3	387	94	0	484	1624
01:00 PM	47	4	58	0	109	71	97	2	0	170	7	0	3	0	10	4	91	24	0	119	408
01:15 PM	30	0	81	0	111	68	92	3	0	163	3	0	1	0	4	1	78	25	0	104	382
01:30 PM	23	2	60	0	85	42	80	3	0	125	10	0	1	0	11	2	63	15	0	80	301
01:45 PM	14	0	52	0	66	54	94	3	0	151	3	0	0	0	3	0	72	23	0	95	315
Total	114	6	251	0	371	235	363	11	0	609	23	0	5	0	28	7	304	87	0	398	1406
Grand Total	562	36	993	1	1592	1134	1398	58	0	2590	117	3	21	0	141	22	1517	402	0	1941	6264
Apprch %	35.3	2.3	62.4	0.1		43.8	54	2.2	0		83	2.1	14.9	0		1.1	78.2	20.7	0		
Total %	9	0.6	15.9	0	25.4	18.1	22.3	0.9	0	41.3	1.9	0	0.3	0	2.3	0.4	24.2	6.4	0	31	
Car	562	36	992	1	1591	1133	1385	57	0	2575	117	3	20	0	140	22	1500	402	0	1924	6230
% Car	100	100	99.9	100	99.9	99.9	99.1	98.3	0	99.4	100	100	95.2	0	99.3	100	98.9	100	0	99.1	99.5
Truck	0	0	1	0	1	1	13	1	0	15	0	0	1	0	1	0	17	0	0	17	34
% Truck	0	0	0.1	0	0.1	0.1	0.9	1.7	0	0.6	0	0	4.8	0	0.7	0	1.1	0	0	0.9	0.5

	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:15 AM																	
10:15 AM	46	**3**	48	97	**108**	84	3	**195**	**8**	0	0	**8**	1	**117**	**39**	**157**	**457**
10:30 AM	45	1	52	98	78	104	4	186	6	0	**2**	8	2	95	26	123	415
10:45 AM	**51**	2	**69**	**122**	90	87	0	177	3	0	1	4	**3**	98	31	132	435
11:00 AM	26	1	47	74	69	**108**	**7**	184	5	**1**	0	6	0	86	32	118	382
Total Volume	168	7	216	391	345	383	14	742	22	1	3	26	6	396	128	530	1689
% App. Total	43	1.8	55.2		46.5	51.6	1.9		84.6	3.8	11.5		1.1	74.7	24.2		
PHF	.824	.583	.783	.801	.799	.887	.500	.951	.688	.250	.375	.813	.500	.846	.821	.844	.924

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 5-Longhill Gate_Warhill Trail and Longhill Rd. THU
Site Code :
Start Date : 5/12/2016

Groups Printed- Car

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	7	0	15	0	22	39	114	7	0	160	3	1	0	0	4	2	124	13	0	139	325
04:15 PM	8	0	16	0	24	42	112	5	0	159	2	1	0	0	3	1	103	14	0	118	304
04:30 PM	8	1	18	0	27	38	104	4	0	146	5	0	0	0	5	0	103	7	0	110	288
04:45 PM	20	0	24	0	44	42	137	8	0	187	3	0	4	0	7	4	110	17	0	131	369
Total	43	1	73	0	117	161	467	24	0	652	13	2	4	0	19	7	440	51	0	498	1286
05:00 PM	33	0	33	1	67	64	114	5	0	183	9	0	1	0	10	6	84	26	0	116	376
05:15 PM	39	1	17	0	57	99	119	7	0	225	7	0	1	0	8	4	112	73	0	189	479
05:30 PM	29	1	44	0	74	80	95	9	0	184	5	0	1	0	6	2	110	34	0	146	410
05:45 PM	16	0	36	0	52	53	104	4	0	161	4	1	0	0	5	0	71	22	0	93	311
Total	117	2	130	1	250	296	432	25	0	753	25	1	3	0	29	12	377	155	0	544	1576
Grand Total	160	3	203	1	367	457	899	49	0	1405	38	3	7	0	48	19	817	206	0	1042	2862
Apprch %	43.6	0.8	55.3	0.3		32.5	64	3.5	0		79.2	6.2	14.6	0		1.8	78.4	19.8	0		
Total %	5.6	0.1	7.1	0	12.8	16	31.4	1.7	0	49.1	1.3	0.1	0.2	0	1.7	0.7	28.5	7.2	0	36.4	

	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	20	0	24	44	42	**137**	8	187	3	0	**4**	7	4	110	17	131	369
05:00 PM	33	0	33	66	64	114	5	183	**9**	0	1	**10**	**6**	84	26	116	375
05:15 PM	**39**	**1**	17	57	**99**	119	7	**225**	7	0	1	8	4	**112**	**73**	**189**	**479**
05:30 PM	29	1	**44**	**74**	80	95	**9**	184	5	0	1	6	2	110	34	146	410
Total Volume	121	2	118	241	285	465	29	779	24	0	7	31	16	416	150	582	1633
% App. Total	50.2	0.8	49		36.6	59.7	3.7		77.4	0	22.6		2.7	71.5	25.8		
PHF	.776	.500	.670	.814	.720	.849	.806	.866	.667	.000	.438	.775	.667	.929	.514	.770	.852

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 5-Longhill Gate_Warhill Trail and Longhill Rd. THU
Site Code :
Start Date : 5/12/2016

Groups Printed- Truck

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	1	0	2	0	3	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	8
04:15 PM	0	0	1	0	1	0	4	0	0	4	0	1	0	0	1	1	4	2	0	7	13
04:30 PM	0	0	1	0	1	1	4	0	0	5	0	0	0	0	0	0	5	0	0	5	11
04:45 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	6	0	0	6	8
Total	1	0	4	0	5	1	12	0	0	13	0	1	0	0	1	1	18	2	0	21	40
05:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	1	0	0	1	5
05:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	6
05:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
05:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	5
Total	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	11	0	0	11	20
Grand Total	1	0	4	0	5	1	21	0	0	22	0	1	0	0	1	1	29	2	0	32	60
Apprch %	20	0	80	0		4.5	95.5	0	0		0	100	0	0		3.1	90.6	6.2	0		
Total %	1.7	0	6.7	0	8.3	1.7	35	0	0	36.7	0	1.7	0	0	1.7	1.7	48.3	3.3	0	53.3	

	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**1**	0	**2**	**3**	0	2	0	2	0	0	0	0	0	3	0	3	8
04:15 PM	0	0	1	1	0	**4**	0	4	0	**1**	0	**1**	**1**	4	**2**	**7**	**13**
04:30 PM	0	0	1	1	**1**	4	0	**5**	0	0	0	0	0	5	0	5	11
04:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	**6**	0	6	8
Total Volume	1	0	4	5	1	12	0	13	0	1	0	1	1	18	2	21	40
% App. Total	20	0	80		7.7	92.3	0		0	100	0		4.8	85.7	9.5		
PHF	.250	.000	.500	.417	.250	.750	.000	.650	.000	.250	.000	.250	.250	.750	.250	.750	.769

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File Name : 5-Longhill Gate_Warhill Trail and Longhill Rd. THU
Site Code :
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Groups Printed- Bicycles on Crosswalk

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Pedestrians

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Grand Total	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	100		
Total %	0	0	0	66.7	66.7	0	0	0	0	0	0	0	0	0	0	0	0	0	33.3	33.3	

	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Car - Truck

	Warhill Trail Southbound					Longhill Rd. Westbound					Longhill Gate Rd. Northbound					Longhill Rd. Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	8	0	17	0	25	39	116	7	0	162	3	1	0	0	4	2	127	13	0	142	333
04:15 PM	8	0	17	0	25	42	116	5	0	163	2	2	0	0	4	2	107	16	0	125	317
04:30 PM	8	1	19	0	28	39	108	4	0	151	5	0	0	0	5	0	108	7	0	115	299
04:45 PM	20	0	24	0	44	42	139	8	0	189	3	0	4	0	7	4	116	17	0	137	377
Total	44	1	77	0	122	162	479	24	0	665	13	3	4	0	20	8	458	53	0	519	1326
05:00 PM	33	0	33	1	67	64	118	5	0	187	9	0	1	0	10	6	85	26	0	117	381
05:15 PM	39	1	17	0	57	99	120	7	0	226	7	0	1	0	8	4	117	73	0	194	485
05:30 PM	29	1	44	0	74	80	98	9	0	187	5	0	1	0	6	2	111	34	0	147	414
05:45 PM	16	0	36	0	52	53	105	4	0	162	4	1	0	0	5	0	75	22	0	97	316
Total	117	2	130	1	250	296	441	25	0	762	25	1	3	0	29	12	388	155	0	555	1596
Grand Total	161	3	207	1	372	458	920	49	0	1427	38	4	7	0	49	20	846	208	0	1074	2922
Apprch %	43.3	0.8	55.6	0.3		32.1	64.5	3.4	0		77.6	8.2	14.3	0		1.9	78.8	19.4	0		
Total %	5.5	0.1	7.1	0	12.7	15.7	31.5	1.7	0	48.8	1.3	0.1	0.2	0	1.7	0.7	29	7.1	0	36.8	
Car	160	3	203	1	367	457	899	49	0	1405	38	3	7	0	48	19	817	206	0	1042	2862
% Car	99.4	100	98.1	100	98.7	99.8	97.7	100	0	98.5	100	75	100	0	98	95	96.6	99	0	97	97.9
Truck	1	0	4	0	5	1	21	0	0	22	0	1	0	0	1	1	29	2	0	32	60
% Truck	0.6	0	1.9	0	1.3	0.2	2.3	0	0	1.5	0	25	0	0	2	5	3.4	1	0	3	2.1

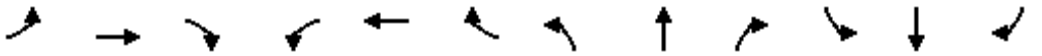
	Warhill Trail Southbound				Longhill Rd. Westbound				Longhill Gate Rd. Northbound				Longhill Rd. Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	20	0	24	44	42	**139**	8	189	3	0	**4**	7	4	116	17	137	377
05:00 PM	33	0	33	66	64	118	5	187	**9**	0	1	**10**	**6**	85	26	117	380
05:15 PM	**39**	**1**	17	57	**99**	120	7	**226**	7	0	1	8	4	**117**	**73**	**194**	**485**
05:30 PM	29	1	**44**	**74**	80	98	**9**	187	5	0	1	6	2	111	34	147	414
Total Volume	121	2	118	241	285	475	29	789	24	0	7	31	16	429	150	595	1656
% App. Total	50.2	0.8	49		36.1	60.2	3.7		77.4	0	22.6		2.7	72.1	25.2		
PHF	.776	.500	.670	.814	.720	.854	.806	.873	.667	.000	.438	.775	.667	.917	.514	.767	.854

Appendix D
SYNCHRO Analysis of 2016 Existing Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	44	738	548	436	790	41	215	218	282	85	36
v/c Ratio	0.34	0.61	0.35	0.79	0.50	0.05	0.77	0.77	0.56	0.51	0.11
Control Delay	54.4	34.5	0.6	45.8	29.7	0.1	61.9	61.8	9.6	57.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	34.5	0.6	45.8	29.7	0.1	61.9	61.8	9.6	57.5	0.7
Queue Length 50th (ft)	30	257	0	145	286	0	149	152	0	58	0
Queue Length 95th (ft)	65	297	0	#258	352	m0	#280	#282	75	107	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	217	1285	1583	554	1583	820	296	299	511	214	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.57	0.35	0.79	0.50	0.05	0.73	0.73	0.55	0.40	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	664	493	392	711	37	352	38	254	39	38	32
Future Volume (vph)	40	664	493	392	711	37	352	38	254	39	38	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1701	1583		1817	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1701	1583		1817	1583
Peak-hour factor, 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
Adj. Flow (vph)	44	738	548	436	790	41	391	42	282	43	42	36
RTOR Reduction (vph)	0	0	0	0	0	24	0	0	235	0	0	33
Lane Group Flow (vph)	44	738	548	436	790	17	215	218	47	0	85	3
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	7.1	35.9	110.0	17.8	46.1	46.1	18.4	18.4	18.4		8.9	8.9
Effective Green, g (s)	7.1	35.9	110.0	17.8	46.1	46.1	18.4	18.4	18.4		8.9	8.9
Actuated g/C Ratio	0.06	0.33	1.00	0.16	0.42	0.42	0.17	0.17	0.17		0.08	0.08
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	114	1155	1583	555	1483	663	281	284	264		147	128
v/s Ratio Prot	0.02	c0.21		c0.13	c0.22		0.13	c0.13			0.05	
v/s Ratio Perm			c0.35			0.01			0.03			0.00
v/c Ratio	0.39	0.64	0.35	0.79	0.53	0.03	0.77	0.77	0.18		0.58	0.02
Uniform Delay, d1	49.4	31.5	0.0	44.3	23.9	18.8	43.7	43.8	39.3		48.7	46.5
Progression Factor	1.00	1.00	1.00	0.76	1.13	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	2.7	0.6	6.5	1.2	0.1	11.7	11.7	0.3		5.4	0.1
Delay (s)	51.5	34.2	0.6	40.1	28.2	18.8	55.5	55.5	39.6		54.2	46.6
Level of Service	D	C	A	D	C	B	E	E	D		D	D
Approach Delay (s)		21.0			32.0			49.2			51.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	717	359	35	1066	251	247
v/c Ratio	0.36	0.33	0.28	0.44	0.75	0.49
Control Delay	25.4	12.2	53.9	10.1	55.4	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	12.2	53.9	10.1	55.4	7.9
Queue Length 50th (ft)	234	138	23	186	169	0
Queue Length 95th (ft)	198	82	m45	361	231	57
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1980	1077	273	2412	432	572
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.33	0.13	0.44	0.58	0.43

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	1	630	316	31	938	221	217
Future Volume (vph)	1	630	316	31	938	221	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3539	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3377	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1	716	359	35	1066	251	247
RTOR Reduction (vph)	0	0	159	0	0	0	200
Lane Group Flow (vph)	0	717	200	35	1066	251	47
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		61.3	61.3	5.3	74.6	20.9	20.9
Effective Green, g (s)		61.3	61.3	5.3	74.6	20.9	20.9
Actuated g/C Ratio		0.56	0.56	0.05	0.68	0.19	0.19
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1881	882	85	2400	336	300
v/s Ratio Prot				0.02	c0.30	c0.14	
v/s Ratio Perm		0.21	0.13				0.03
v/c Ratio		0.38	0.23	0.41	0.44	0.75	0.16
Uniform Delay, d1		13.7	12.3	50.8	8.2	42.1	37.2
Progression Factor		1.71	5.97	1.02	1.07	1.00	1.00
Incremental Delay, d2		0.5	0.5	2.9	0.5	8.8	0.2
Delay (s)		24.0	74.2	54.6	9.2	50.8	37.4
Level of Service		C	E	D	A	D	D
Approach Delay (s)		40.7			10.7	44.2	
Approach LOS		D			B	D	

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	744	160	166	609	417	82
v/c Ratio	0.60	0.25	0.71	0.29	0.83	0.16
Control Delay	27.1	6.0	62.5	11.9	51.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	6.0	62.5	11.9	51.9	7.3
Queue Length 50th (ft)	282	0	113	112	267	0
Queue Length 95th (ft)	201	38	182	133	#452	36
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1331	689	273	2221	505	510
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.23	0.61	0.27	0.83	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	671	166	154	566	388	76
Future Volume (vph)	4	671	166	154	566	388	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.91	0.91	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3377	1441	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3216	1441	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	722	178	166	609	417	82
RTOR Reduction (vph)	0	2	99	0	0	0	59
Lane Group Flow (vph)	0	742	61	166	609	417	23
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		42.2	42.2	14.5	64.7	31.3	31.3
Effective Green, g (s)		42.2	42.2	14.5	64.7	31.3	31.3
Actuated g/C Ratio		0.38	0.38	0.13	0.59	0.28	0.28
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1233	552	233	2081	503	450
v/s Ratio Prot				c0.09	0.17	c0.24	
v/s Ratio Perm		c0.23	0.04				0.01
v/c Ratio		0.60	0.11	0.71	0.29	0.83	0.05
Uniform Delay, d1		27.2	21.8	45.8	11.3	36.8	28.6
Progression Factor		0.88	1.30	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.1	0.4	9.9	0.4	10.8	0.0
Delay (s)		26.1	28.8	55.6	11.6	47.7	28.6
Level of Service		C	C	E	B	D	C
Approach Delay (s)		26.6			21.0	44.5	
Approach LOS		C			C	D	

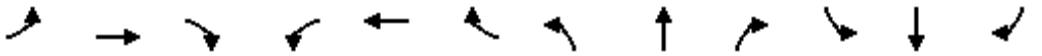
Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	2	499	49	426	655	1	24	233	1	2	2
v/c Ratio	0.01	0.68	0.06	0.70	0.54	0.00	0.13	0.62	0.01	0.01	0.02
Control Delay	35.0	25.5	0.2	36.7	12.7	0.0	32.0	12.6	34.0	34.5	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	25.5	0.2	36.7	12.7	0.0	32.0	12.6	34.0	34.5	34.5
Queue Length 50th (ft)	0	160	0	86	97	0	9	0	0	1	1
Queue Length 95th (ft)	4	#377	0	#180	#446	0	32	52	5	8	8
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	242	737	779	605	1211	1091	655	731	379	390	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.68	0.06	0.70	0.54	0.00	0.04	0.32	0.00	0.01	0.01

Intersection Summary

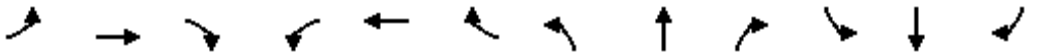
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	429	42	366	563	1	18	3	200	2	1	2
Future Volume (vph)	2	429	42	366	563	1	18	3	200	2	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.98	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1785	1583	1681	1726	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.98	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1785	1583	1681	1726	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	2	499	49	426	655	1	21	3	233	2	1	2
RTOR Reduction (vph)	0	0	29	0	0	0	0	0	212	0	0	0
Lane Group Flow (vph)	2	499	20	426	655	1	0	24	21	1	2	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	0.8	34.2	34.2	12.6	46.5	46.5		7.3	7.3	1.0	1.0	1.0
Effective Green, g (s)	0.8	34.2	34.2	12.6	46.5	46.5		7.3	7.3	1.0	1.0	1.0
Actuated g/C Ratio	0.01	0.41	0.41	0.15	0.56	0.56		0.09	0.09	0.01	0.01	0.01
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	33	771	655	523	1048	891		157	139	20	20	19
v/s Ratio Prot	0.00	0.27		c0.12	c0.35			c0.01		0.00	0.00	
v/s Ratio Perm			0.01			0.00			0.01			c0.00
v/c Ratio	0.06	0.65	0.03	0.81	0.62	0.00		0.15	0.15	0.05	0.10	0.11
Uniform Delay, d1	40.5	19.4	14.4	33.9	12.2	7.9		34.8	34.8	40.3	40.4	40.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	1.9	0.0	9.5	1.2	0.0		0.5	0.5	1.0	2.2	2.4
Delay (s)	41.3	21.3	14.4	43.3	13.3	7.9		35.2	35.3	41.4	42.5	42.8
Level of Service	D	C	B	D	B	A		D	D	D	D	D
Approach Delay (s)		20.7			25.1			35.3			42.4	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	82.6	Sum of lost time (s)	27.5
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	429	16	29	475	285	7	0	24	119	2	121
Future Volume (Veh/h)	150	429	16	29	475	285	7	0	24	119	2	121
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	176	505	19	34	559	335	8	0	28	140	2	142
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	894			524			1566	1828	514	1512	1503	559
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	894			524			1566	1828	514	1512	1503	559
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	77			97			85	100	95	0	98	73
cM capacity (veh/h)	759			1043			52	57	560	75	90	529

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	176	524	34	559	335	36	284
Volume Left	176	0	34	0	0	8	140
Volume Right	0	19	0	0	335	28	142
cSH	759	1700	1043	1700	1700	177	139
Volume to Capacity	0.23	0.31	0.03	0.33	0.20	0.20	2.04
Queue Length 95th (ft)	22	0	3	0	0	18	569
Control Delay (s)	11.2	0.0	8.6	0.0	0.0	30.5	544.3
Lane LOS	B		A			D	F
Approach Delay (s)	2.8		0.3			30.5	544.3
Approach LOS						D	F

Intersection Summary				
Average Delay	81.1			
Intersection Capacity Utilization	56.7%	ICU Level of Service		B
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	102	259	293	223	230	241	298	299	184	185	229	183
Average Queue (ft)	26	148	182	98	120	131	152	166	34	95	119	63
95th Queue (ft)	70	232	269	202	208	222	264	277	134	166	195	134
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)		1			0	0	0	7	0	0	0	
Queuing Penalty (veh)		0			0	1	0	3	0	0	1	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	146	66
Average Queue (ft)	54	14
95th Queue (ft)	114	41
Link Distance (ft)	192	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)	3	
Queuing Penalty (veh)	1	

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	258	276	181	118	265	235	174	389
Average Queue (ft)	123	138	70	29	119	107	132	104
95th Queue (ft)	237	252	140	74	221	199	192	269
Link Distance (ft)	650	650			689	689		625
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)					2		10	0
Queuing Penalty (veh)					1		22	0

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	TR	R	L	T	T	L	R
Maximum Queue (ft)	307	318	120	238	221	178	447	69
Average Queue (ft)	125	141	33	114	103	54	242	27
95th Queue (ft)	249	261	79	197	184	129	384	55
Link Distance (ft)	689	689	689		860	860		496
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)							0	
Queuing Penalty (veh)							0	

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	L	T	R	LT	R	L	LT	R
Maximum Queue (ft)	29	262	126	129	154	222	2	42	95	23	13	17
Average Queue (ft)	2	120	21	58	85	62	0	11	42	1	1	1
95th Queue (ft)	14	211	71	109	135	155	2	33	72	9	9	9
Link Distance (ft)		2587			1225	1225		2008			194	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	400		225	250			200		700	135		135
Storage Blk Time (%)		1	0			0						
Queuing Penalty (veh)		0	0			0						

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	T	R	LTR	LT	R
Maximum Queue (ft)	108	36	3	42	52	412	199
Average Queue (ft)	46	8	0	7	18	128	64
95th Queue (ft)	87	27	2	28	42	343	183
Link Distance (ft)			1476		644	1477	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200	200		200			215
Storage Blk Time (%)						12	0
Queuing Penalty (veh)						15	0

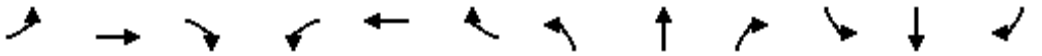
Network Summary

Network wide Queuing Penalty: 44

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	19	775	335	241	684	44	219	225	427	87	21
v/c Ratio	0.18	0.57	0.21	0.62	0.38	0.05	0.76	0.77	0.72	0.51	0.07
Control Delay	52.1	31.1	0.3	40.9	21.4	0.6	61.2	61.9	13.6	57.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	31.1	0.3	40.9	21.4	0.6	61.2	61.9	13.6	57.8	0.4
Queue Length 50th (ft)	13	250	0	73	214	0	150	154	20	59	0
Queue Length 95th (ft)	37	314	0	94	296	m6	#286	#293	129	109	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	217	1381	1583	436	1802	905	300	304	604	214	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.56	0.21	0.55	0.38	0.05	0.73	0.74	0.71	0.41	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	752	325	234	663	43	379	51	414	49	35	20
Future Volume (vph)	18	752	325	234	663	43	379	51	414	49	35	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1704	1583		1810	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1704	1583		1810	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	775	335	241	684	44	391	53	427	51	36	21
RTOR Reduction (vph)	0	0	0	0	0	24	0	0	325	0	0	19
Lane Group Flow (vph)	19	775	335	241	684	20	219	225	102	0	87	2
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	3.2	40.8	110.0	12.4	49.5	49.5	18.8	18.8	18.8		9.0	9.0
Effective Green, g (s)	3.2	40.8	110.0	12.4	49.5	49.5	18.8	18.8	18.8		9.0	9.0
Actuated g/C Ratio	0.03	0.37	1.00	0.11	0.45	0.45	0.17	0.17	0.17		0.08	0.08
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	51	1312	1583	386	1592	712	287	291	270		148	129
v/s Ratio Prot	0.01	c0.22		c0.07	c0.19		0.13	c0.13			c0.05	
v/s Ratio Perm			0.21			0.01			0.06			0.00
v/c Ratio	0.37	0.59	0.21	0.62	0.43	0.03	0.76	0.77	0.38		0.59	0.01
Uniform Delay, d1	52.4	27.9	0.0	46.6	20.6	16.8	43.5	43.6	40.4		48.7	46.4
Progression Factor	1.00	1.00	1.00	0.73	1.04	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.5	2.0	0.3	3.0	0.8	0.1	11.4	12.0	0.9		5.9	0.0
Delay (s)	57.0	29.8	0.3	36.9	22.3	16.9	54.9	55.6	41.3		54.6	46.5
Level of Service	E	C	A	D	C	B	D	E	D		D	D
Approach Delay (s)		21.5			25.7			48.4			53.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	976	337	56	815	202	403
v/c Ratio	0.50	0.32	0.39	0.33	0.70	0.75
Control Delay	15.2	3.2	52.5	7.3	55.9	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	3.2	52.5	7.3	55.9	17.7
Queue Length 50th (ft)	166	0	36	123	136	43
Queue Length 95th (ft)	211	30	m59	247	200	144
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1942	1055	273	2495	426	634
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.32	0.21	0.33	0.47	0.64

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	914	317	53	766	190	379
Future Volume (vph)	4	914	317	53	766	190	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3371	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	4	972	337	56	815	202	403
RTOR Reduction (vph)	0	0	147	0	0	0	280
Lane Group Flow (vph)	0	976	190	56	815	202	123
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		61.9	61.9	7.7	77.6	17.9	17.9
Effective Green, g (s)		61.9	61.9	7.7	77.6	17.9	17.9
Actuated g/C Ratio		0.56	0.56	0.07	0.71	0.16	0.16
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1896	890	123	2496	288	257
v/s Ratio Prot				0.03	c0.23	c0.11	
v/s Ratio Perm		c0.29	0.12				0.08
v/c Ratio		0.51	0.21	0.46	0.33	0.70	0.48
Uniform Delay, d1		14.8	11.9	49.1	6.2	43.5	41.8
Progression Factor		0.89	1.34	0.95	1.03	1.00	1.00
Incremental Delay, d2		0.8	0.4	2.5	0.3	7.5	1.4
Delay (s)		13.9	16.4	49.2	6.7	51.0	43.2
Level of Service		B	B	D	A	D	D
Approach Delay (s)		14.6			9.4	45.8	
Approach LOS		B			A	D	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1100	294	230	569	303	96
v/c Ratio	0.75	0.34	0.83	0.24	0.82	0.24
Control Delay	30.3	6.6	69.7	8.2	59.5	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	6.6	69.7	8.2	59.5	8.2
Queue Length 50th (ft)	346	14	154	78	203	0
Queue Length 95th (ft)	456	72	#293	114	295	41
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1458	853	287	2349	434	460
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.34	0.80	0.24	0.70	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	8	1015	273	214	529	282	89
Future Volume (vph)	8	1015	273	214	529	282	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3360	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	9	1091	294	230	569	303	96
RTOR Reduction (vph)	0	0	167	0	0	0	76
Lane Group Flow (vph)	0	1100	127	230	569	303	20
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		47.7	47.7	17.3	73.0	23.0	23.0
Effective Green, g (s)		47.7	47.7	17.3	73.0	23.0	23.0
Actuated g/C Ratio		0.43	0.43	0.16	0.66	0.21	0.21
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1457	686	278	2348	370	330
v/s Ratio Prot				c0.13	0.16	c0.17	
v/s Ratio Perm		c0.33	0.08				0.01
v/c Ratio		0.75	0.19	0.83	0.24	0.82	0.06
Uniform Delay, d1		26.2	19.2	44.9	7.4	41.5	34.8
Progression Factor		0.98	2.16	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.2	0.5	17.9	0.2	13.2	0.1
Delay (s)		29.0	42.0	62.8	7.7	54.7	34.9
Level of Service		C	D	E	A	D	C
Approach Delay (s)		31.7			23.5	49.9	
Approach LOS		C			C	D	

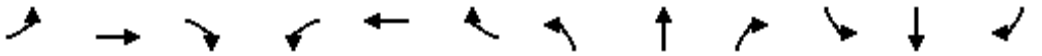
Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	3	477	38	272	365	4	54	387	2	2	4
v/c Ratio	0.01	0.72	0.06	0.53	0.33	0.00	0.23	0.71	0.01	0.01	0.03
Control Delay	35.3	26.7	0.2	33.3	10.8	0.0	30.3	11.7	34.5	34.5	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	26.7	0.2	33.3	10.8	0.0	30.3	11.7	34.5	34.5	34.5
Queue Length 50th (ft)	0	144	0	48	48	0	19	0	1	1	1
Queue Length 95th (ft)	5	#368	0	#135	239	0	60	79	8	8	13
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	270	903	859	524	1137	1035	727	876	423	445	398
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.53	0.04	0.52	0.32	0.00	0.07	0.44	0.00	0.00	0.01

Intersection Summary

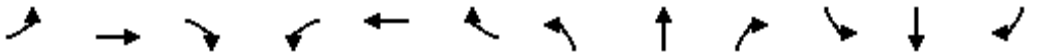
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	453	36	258	347	4	49	2	368	2	2	4
Future Volume (vph)	3	453	36	258	347	4	49	2	368	2	2	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1777	1583	1681	1770	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1777	1583	1681	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	477	38	272	365	4	52	2	387	2	2	4
RTOR Reduction (vph)	0	0	23	0	0	2	0	0	343	0	0	0
Lane Group Flow (vph)	3	477	15	272	365	2	0	54	44	2	2	4
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	0.7	29.8	29.8	10.0	39.6	39.6		8.7	8.7	0.9	0.9	0.9
Effective Green, g (s)	0.7	29.8	29.8	10.0	39.6	39.6		8.7	8.7	0.9	0.9	0.9
Actuated g/C Ratio	0.01	0.39	0.39	0.13	0.51	0.51		0.11	0.11	0.01	0.01	0.01
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	31	721	613	446	959	815		201	179	19	20	18
v/s Ratio Prot	0.00	c0.26		c0.08	0.20			c0.03		0.00	0.00	
v/s Ratio Perm			0.01			0.00			0.03			c0.00
v/c Ratio	0.10	0.66	0.02	0.61	0.38	0.00		0.27	0.24	0.11	0.10	0.22
Uniform Delay, d1	37.8	19.4	14.6	31.6	11.3	9.1		31.2	31.1	37.6	37.6	37.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	2.3	0.0	2.4	0.3	0.0		0.7	0.7	2.4	2.2	6.2
Delay (s)	39.2	21.7	14.6	34.0	11.5	9.1		31.9	31.8	40.0	39.8	43.8
Level of Service	D	C	B	C	B	A		C	C	D	D	D
Approach Delay (s)		21.3			21.0			31.8			41.9	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	27.5
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	396	6	14	383	345	3	1	22	217	7	168
Future Volume (Veh/h)	128	396	6	14	383	345	3	1	22	217	7	168
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	139	430	7	15	416	375	3	1	24	236	8	183
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	791			437			1253	1532	434	1178	1161	416
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	791			437			1253	1532	434	1178	1161	416
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	83			99			97	99	96	0	95	71
cM capacity (veh/h)	829			1123			88	96	622	138	160	637

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	139	437	15	416	375	28	427
Volume Left	139	0	15	0	0	3	236
Volume Right	0	7	0	0	375	24	183
cSH	829	1700	1123	1700	1700	337	219
Volume to Capacity	0.17	0.26	0.01	0.24	0.22	0.08	1.95
Queue Length 95th (ft)	15	0	1	0	0	7	780
Control Delay (s)	10.2	0.0	8.2	0.0	0.0	16.6	481.7
Lane LOS	B		A			C	F
Approach Delay (s)	2.5		0.2			16.6	481.7
Approach LOS						C	F

Intersection Summary				
Average Delay	113.1			
Intersection Capacity Utilization	56.3%	ICU Level of Service		B
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	62	294	341	136	149	159	255	266	185	213	253	257
Average Queue (ft)	9	167	203	32	68	76	129	139	28	107	131	127
95th Queue (ft)	40	264	307	103	126	130	223	237	106	181	211	228
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)		2	0					3	0	0	0	
Queuing Penalty (veh)		0	0					1	0	0	0	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	140	87
Average Queue (ft)	60	11
95th Queue (ft)	120	45
Link Distance (ft)	192	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)	4	0
Queuing Penalty (veh)	1	0

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	328	361	166	115	190	197	174	350
Average Queue (ft)	173	197	66	46	84	83	119	139
95th Queue (ft)	307	333	126	93	160	167	190	281
Link Distance (ft)	650	650			701	701		625
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)					0		6	3
Queuing Penalty (veh)					0		24	6

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	386	390	148	299	194	124	346	96
Average Queue (ft)	175	190	55	154	77	40	187	36
95th Queue (ft)	325	333	112	256	149	89	300	74
Link Distance (ft)	701	701	701		860	860		495
Upstream Blk Time (%)	0	0						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	L	T	R	LT	R	L	LT	R
Maximum Queue (ft)	27	314	120	113	129	189	20	69	172	12	23	23
Average Queue (ft)	3	154	20	47	74	72	1	23	79	1	3	3
95th Queue (ft)	16	256	75	93	117	150	9	55	139	6	15	16
Link Distance (ft)		2587			1225	1225		2008			194	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	400		225	250			200		700	135		135
Storage Blk Time (%)		2				0						
Queuing Penalty (veh)		1				0						

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	WB	WB	NB	SB	SB
Directions Served	L	L	R	LTR	LT	R
Maximum Queue (ft)	90	23	52	47	1032	240
Average Queue (ft)	39	3	9	16	495	155
95th Queue (ft)	73	16	33	38	1235	316
Link Distance (ft)				644	1477	
Upstream Blk Time (%)					7	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	200	200	200			215
Storage Blk Time (%)					51	0
Queuing Penalty (veh)					86	1

Network Summary

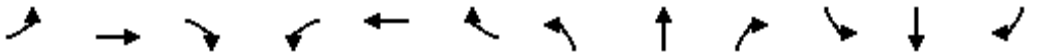
Network wide Queuing Penalty: 121

Appendix E
SYNCHRO Analysis of 2030 Background Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	44	848	630	501	908	41	243	249	324	85	36
v/c Ratio	0.41	0.70	0.40	0.86	0.51	0.05	0.82	0.83	0.60	0.64	0.10
Control Delay	61.4	36.8	0.7	53.0	25.1	0.1	65.6	66.6	9.9	71.8	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	36.8	0.7	53.0	25.1	0.1	65.6	66.6	9.9	71.8	0.5
Queue Length 50th (ft)	30	290	0	158	303	0	172	176	4	59	0
Queue Length 95th (ft)	68	366	0	#253	390	m0	#295	#302	84	#131	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	112	1215	1583	595	1770	893	320	324	558	137	371
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.70	0.40	0.84	0.51	0.05	0.76	0.77	0.58	0.62	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	763	567	451	817	37	405	38	292	39	38	32
Future Volume (vph)	40	763	567	451	817	37	405	38	292	39	38	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1699	1583		1817	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1699	1583		1817	1583
Peak-hour factor, 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
Adj. Flow (vph)	44	848	630	501	908	41	450	42	324	43	42	36
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	261	0	0	34
Lane Group Flow (vph)	44	848	630	501	908	19	243	249	63	0	85	2
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	4.2	36.2	110.0	18.6	50.1	50.1	19.5	19.5	19.5		6.7	6.7
Effective Green, g (s)	4.2	36.2	110.0	18.6	50.1	50.1	19.5	19.5	19.5		6.7	6.7
Actuated g/C Ratio	0.04	0.33	1.00	0.17	0.46	0.46	0.18	0.18	0.18		0.06	0.06
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	67	1164	1583	580	1611	720	297	301	280		110	96
v/s Ratio Prot	0.02	c0.24		c0.15	0.26		0.14	c0.15			0.05	
v/s Ratio Perm			c0.40			0.01			0.04			0.00
v/c Ratio	0.66	0.73	0.40	0.86	0.56	0.03	0.82	0.83	0.23		0.77	0.02
Uniform Delay, d1	52.2	32.6	0.0	44.5	21.9	16.5	43.5	43.6	38.8		50.9	48.6
Progression Factor	1.00	1.00	1.00	0.87	1.11	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	20.8	4.0	0.7	11.1	1.2	0.1	15.9	16.8	0.4		27.9	0.1
Delay (s)	73.0	36.6	0.7	49.8	25.7	16.6	59.4	60.4	39.2		78.8	48.7
Level of Service	E	D	A	D	C	B	E	E	D		E	D
Approach Delay (s)		22.8			33.8			51.7			69.8	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	824	413	41	1225	289	283
v/c Ratio	0.43	0.39	0.32	0.53	0.77	0.56
Control Delay	17.9	9.5	45.6	7.0	53.9	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.9	9.5	45.6	7.0	53.9	13.9
Queue Length 50th (ft)	281	165	27	108	194	40
Queue Length 95th (ft)	365	234	m53	265	256	104
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1905	1073	132	2319	539	631
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.38	0.31	0.53	0.54	0.45

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	1	724	363	36	1078	254	249
Future Volume (vph)	1	724	363	36	1078	254	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3539	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3377	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1	823	412	41	1225	289	283
RTOR Reduction (vph)	0	0	193	0	0	0	169
Lane Group Flow (vph)	0	824	220	41	1225	289	114
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		58.6	58.6	5.5	72.1	23.4	23.4
Effective Green, g (s)		58.6	58.6	5.5	72.1	23.4	23.4
Actuated g/C Ratio		0.53	0.53	0.05	0.66	0.21	0.21
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1799	843	88	2319	376	336
v/s Ratio Prot				0.02	c0.35	c0.16	
v/s Ratio Perm		0.24	0.14				0.07
v/c Ratio		0.46	0.26	0.47	0.53	0.77	0.34
Uniform Delay, d1		15.9	13.9	50.8	10.0	40.8	36.7
Progression Factor		1.02	4.30	0.83	0.57	1.00	1.00
Incremental Delay, d2		0.6	0.6	3.4	0.8	9.1	0.6
Delay (s)		16.9	60.6	45.5	6.4	49.9	37.3
Level of Service		B	E	D	A	D	D
Approach Delay (s)		31.5			7.7	43.7	
Approach LOS		C			A	D	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	834	205	190	698	480	94
v/c Ratio	0.68	0.29	0.79	0.35	0.90	0.17
Control Delay	43.6	14.8	69.5	13.7	58.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	14.8	69.5	13.7	58.0	6.2
Queue Length 50th (ft)	308	76	128	137	314	0
Queue Length 95th (ft)	394	141	#246	180	#482	36
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1235	710	251	2023	579	581
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.29	0.76	0.35	0.83	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	5	771	191	177	649	446	87
Future Volume (vph)	5	771	191	177	649	446	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3365	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	829	205	190	698	480	94
RTOR Reduction (vph)	0	0	130	0	0	0	66
Lane Group Flow (vph)	0	834	75	190	698	480	28
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		40.0	40.0	14.9	62.9	33.1	33.1
Effective Green, g (s)		40.0	40.0	14.9	62.9	33.1	33.1
Actuated g/C Ratio		0.36	0.36	0.14	0.57	0.30	0.30
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1223	575	239	2023	532	476
v/s Ratio Prot				c0.11	0.20	c0.27	
v/s Ratio Perm		c0.25	0.05				0.02
v/c Ratio		0.68	0.13	0.79	0.35	0.90	0.06
Uniform Delay, d1		29.6	23.4	46.1	12.6	36.9	27.4
Progression Factor		1.31	3.71	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.8	0.4	16.5	0.5	18.5	0.1
Delay (s)		41.8	87.1	62.6	13.0	55.4	27.4
Level of Service		D	F	E	B	E	C
Approach Delay (s)		50.7			23.6	50.8	
Approach LOS		D			C	D	

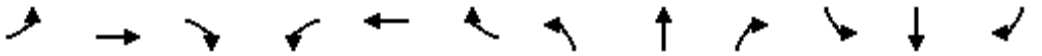
Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	199	658	49	426	864	51	36	233	113	115	124
v/c Ratio	0.87	0.81	0.06	0.83	0.89	0.06	0.28	0.71	0.59	0.60	0.69
Control Delay	90.6	40.2	0.1	64.5	39.0	0.1	58.7	19.0	64.6	64.5	72.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.6	40.2	0.1	64.5	39.0	0.1	58.7	19.0	64.6	64.5	72.0
Queue Length 50th (ft)	80	443	0	168	580	0	27	0	88	89	93
Queue Length 95th (ft)	#152	#632	0	#246	#879	0	59	65	153	155	160
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	228	811	801	524	975	895	391	524	223	226	210
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.81	0.06	0.81	0.89	0.06	0.09	0.44	0.51	0.51	0.59

Intersection Summary

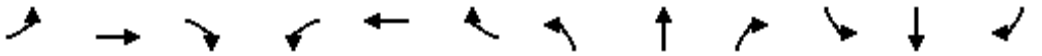
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	566	42	366	743	44	18	13	200	173	23	107
Future Volume (vph)	171	566	42	366	743	44	18	13	200	173	23	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1810	1583	1681	1704	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1810	1583	1681	1704	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	199	658	49	426	864	51	21	15	233	201	27	124
RTOR Reduction (vph)	0	0	28	0	0	24	0	0	216	0	0	0
Lane Group Flow (vph)	199	658	21	426	864	27	0	36	17	113	115	124
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	8.0	52.5	52.5	18.2	63.2	63.2		8.6	8.6	13.7	13.7	13.7
Effective Green, g (s)	8.0	52.5	52.5	18.2	63.2	63.2		8.6	8.6	13.7	13.7	13.7
Actuated g/C Ratio	0.07	0.44	0.44	0.15	0.52	0.52		0.07	0.07	0.11	0.11	0.11
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	811	689	518	977	830		129	112	191	193	179
v/s Ratio Prot	0.06	0.35		c0.12	c0.46			c0.02		0.07	0.07	
v/s Ratio Perm			0.01			0.02			0.01			c0.08
v/c Ratio	0.88	0.81	0.03	0.82	0.88	0.03		0.28	0.15	0.59	0.60	0.69
Uniform Delay, d1	55.8	29.7	19.4	49.6	25.4	13.9		53.0	52.5	50.7	50.8	51.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.2	6.2	0.0	10.2	9.6	0.0		1.2	0.6	4.8	4.9	11.0
Delay (s)	85.0	35.9	19.5	59.7	35.0	13.9		54.2	53.1	55.6	55.6	62.4
Level of Service	F	D	B	E	D	B		D	D	E	E	E
Approach Delay (s)		45.8			42.1			53.3			58.0	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	46.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.5	Sum of lost time (s)	27.5
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	566	16	29	546	285	7	0	24	119	2	121
Future Volume (Veh/h)	150	566	16	29	546	285	7	0	24	119	2	121
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	176	666	19	34	642	335	8	0	28	140	2	142
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	977			685			1810	2072	676	1756	1747	642
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	977			685			1810	2072	676	1756	1747	642
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	75			96			76	100	94	0	97	70
cM capacity (veh/h)	706			908			33	39	454	49	62	474

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	176	685	34	642	335	36	284
Volume Left	176	0	34	0	0	8	140
Volume Right	0	19	0	0	335	28	142
cSH	706	1700	908	1700	1700	118	91
Volume to Capacity	0.25	0.40	0.04	0.38	0.20	0.31	3.12
Queue Length 95th (ft)	25	0	3	0	0	30	Err
Control Delay (s)	11.8	0.0	9.1	0.0	0.0	48.6	Err
Lane LOS	B		A			E	F
Approach Delay (s)	2.4		0.3			48.6	Err
Approach LOS						E	F

Intersection Summary				
Average Delay	1297.4			
Intersection Capacity Utilization	60.4%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	97	317	376	312	282	319	365	344	183	213	235	175
Average Queue (ft)	22	172	225	146	137	173	190	198	37	117	137	77
95th Queue (ft)	64	266	336	272	247	286	328	316	139	189	209	153
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)							0					
Queuing Penalty (veh)							1					
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)		1	0	0	0	1	0	11	0	0	0	
Queuing Penalty (veh)		1	0	1	0	3	1	4	0	0	1	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	133	102
Average Queue (ft)	56	17
95th Queue (ft)	109	54
Link Distance (ft)	192	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)	2	0
Queuing Penalty (veh)	1	0

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	254	280	124	147	268	230	174	435
Average Queue (ft)	82	101	42	36	114	95	142	145
95th Queue (ft)	210	234	91	95	219	199	198	340
Link Distance (ft)	650	650			701	701		625
Upstream Blk Time (%)								0
Queuing Penalty (veh)								0
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)					2		14	0
Queuing Penalty (veh)					1		35	1

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	323	335	128	235	256	208	448	81
Average Queue (ft)	183	199	53	127	129	74	269	29
95th Queue (ft)	316	323	105	207	223	161	403	62
Link Distance (ft)	701	701	701		860	860		495
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)							0	
Queuing Penalty (veh)							0	

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	L	T	R	LT	R	L	LT
Maximum Queue (ft)	138	373	519	250	208	289	587	225	76	110	139	198
Average Queue (ft)	55	104	249	42	110	139	302	51	23	49	57	86
95th Queue (ft)	113	232	410	162	191	238	528	187	59	86	114	157
Link Distance (ft)			2587			1225	1225		2008			194
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	400	400		225	250			200		700	135	
Storage Blk Time (%)			11	0	0	1	20	0			1	2
Queuing Penalty (veh)			24	0	0	2	9	0			1	4

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	74
95th Queue (ft)	142
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	135
Storage Blk Time (%)	2
Queuing Penalty (veh)	3

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	R	LTR	LT	R
Maximum Queue (ft)	106	2	31	49	50	672	240
Average Queue (ft)	46	0	9	7	18	252	100
95th Queue (ft)	83	2	27	30	41	661	256
Link Distance (ft)		1287			644	1477	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200		200	200			215
Storage Blk Time (%)						29	0
Queuing Penalty (veh)						35	0

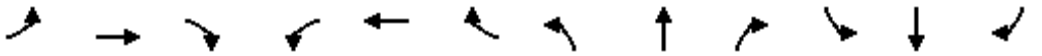
Network Summary

Network wide Queuing Penalty: 129

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	19	891	386	277	786	44	251	251	491	87	21
v/c Ratio	0.22	0.77	0.24	0.78	0.49	0.05	0.64	0.63	0.92	0.66	0.07
Control Delay	56.3	39.9	0.4	66.7	18.9	0.1	45.1	44.7	45.6	73.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	39.9	0.4	66.7	18.9	0.1	45.1	44.7	45.6	73.6	0.5
Queue Length 50th (ft)	13	309	0	77	138	0	162	162	195	61	0
Queue Length 95th (ft)	38	390	0	#159	348	1	251	250	#383	#136	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	88	1152	1583	355	1595	825	443	448	576	135	297
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.77	0.24	0.78	0.49	0.05	0.57	0.56	0.85	0.64	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	864	374	269	762	43	436	51	476	49	35	20
Future Volume (vph)	18	864	374	269	762	43	436	51	476	49	35	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1702	1583		1810	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1702	1583		1810	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	891	386	277	786	44	449	53	491	51	36	21
RTOR Reduction (vph)	0	0	0	0	0	26	0	0	165	0	0	19
Lane Group Flow (vph)	19	891	386	277	786	18	251	251	326	0	87	2
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	2.2	35.9	110.0	11.3	44.5	44.5	25.8	25.8	25.8		8.0	8.0
Effective Green, g (s)	2.2	35.9	110.0	11.3	44.5	44.5	25.8	25.8	25.8		8.0	8.0
Actuated g/C Ratio	0.02	0.33	1.00	0.10	0.40	0.40	0.23	0.23	0.23		0.07	0.07
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	35	1155	1583	352	1431	640	394	399	371		131	115
v/s Ratio Prot	0.01	c0.25		c0.08	c0.22		0.15	0.15			c0.05	
v/s Ratio Perm			0.24			0.01			c0.21			0.00
v/c Ratio	0.54	0.77	0.24	0.79	0.55	0.03	0.64	0.63	0.88		0.66	0.01
Uniform Delay, d1	53.4	33.4	0.0	48.2	25.1	19.7	37.9	37.8	40.6		49.7	47.3
Progression Factor	1.00	1.00	1.00	1.07	0.75	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	16.1	5.0	0.4	10.2	1.4	0.1	3.4	3.1	20.2		12.0	0.0
Delay (s)	69.5	38.4	0.4	61.8	20.3	19.8	41.2	40.9	60.8		61.7	47.4
Level of Service	E	D	A	E	C	B	D	D	E		E	D
Approach Delay (s)		27.5			30.6			50.8			58.9	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1123	387	65	936	232	464
v/c Ratio	0.65	0.39	0.54	0.42	0.54	0.91
Control Delay	16.3	1.6	55.7	14.8	40.4	48.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	1.6	55.7	14.8	40.4	48.1
Queue Length 50th (ft)	192	4	36	258	139	208
Queue Length 95th (ft)	231	m12	m75	m312	210	#370
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1719	997	124	2217	506	573
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.39	0.52	0.42	0.46	0.81

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	5	1051	364	61	880	218	436
Future Volume (vph)	5	1051	364	61	880	218	436
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3366	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	5	1118	387	65	936	232	464
RTOR Reduction (vph)	0	0	195	0	0	0	128
Lane Group Flow (vph)	0	1123	192	65	936	232	336
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		54.6	54.6	6.3	68.9	26.6	26.6
Effective Green, g (s)		54.6	54.6	6.3	68.9	26.6	26.6
Actuated g/C Ratio		0.50	0.50	0.06	0.63	0.24	0.24
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1670	785	101	2216	428	382
v/s Ratio Prot				0.04	c0.26	0.13	
v/s Ratio Perm		c0.33	0.12				c0.21
v/c Ratio		0.67	0.24	0.64	0.42	0.54	0.88
Uniform Delay, d1		20.9	15.9	50.8	10.4	36.4	40.2
Progression Factor		0.67	0.46	0.82	1.26	1.00	1.00
Incremental Delay, d2		1.4	0.5	11.7	0.5	1.4	19.9
Delay (s)		15.5	7.8	53.1	13.7	37.8	60.0
Level of Service		B	A	D	B	D	E
Approach Delay (s)		13.5			16.3	52.6	
Approach LOS		B			B	D	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1265	338	265	654	348	110
v/c Ratio	0.88	0.39	0.92	0.28	0.95	0.27
Control Delay	35.9	7.7	83.1	8.0	79.2	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.9	7.7	83.1	8.0	79.2	8.6
Queue Length 50th (ft)	348	38	186	91	244	0
Queue Length 95th (ft)	#397	m64	#341	118	#423	46
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1442	862	289	2353	370	417
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.39	0.92	0.28	0.94	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	9	1167	314	246	608	324	102
Future Volume (vph)	9	1167	314	246	608	324	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3356	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	10	1255	338	265	654	348	110
RTOR Reduction (vph)	0	0	182	0	0	0	87
Lane Group Flow (vph)	0	1265	156	265	654	348	23
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		47.3	47.3	17.9	73.2	22.8	22.8
Effective Green, g (s)		47.3	47.3	17.9	73.2	22.8	22.8
Actuated g/C Ratio		0.43	0.43	0.16	0.67	0.21	0.21
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1443	680	288	2355	366	328
v/s Ratio Prot				c0.15	0.18	c0.20	
v/s Ratio Perm		c0.38	0.10				0.01
v/c Ratio		0.88	0.23	0.92	0.28	0.95	0.07
Uniform Delay, d1		28.7	19.8	45.3	7.6	43.0	35.1
Progression Factor		1.03	2.30	1.00	1.00	1.00	1.00
Incremental Delay, d2		5.7	0.6	32.8	0.3	34.3	0.1
Delay (s)		35.2	46.1	78.2	7.8	77.4	35.2
Level of Service		D	D	E	A	E	D
Approach Delay (s)		37.5			28.1	67.2	
Approach LOS		D			C	E	

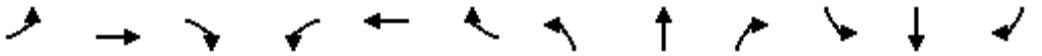
Intersection Summary			
HCM 2000 Control Delay	39.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	160	629	38	272	482	41	65	387	92	95	102
v/c Ratio	0.62	0.89	0.05	0.83	0.64	0.06	0.24	0.87	0.49	0.50	0.58
Control Delay	61.1	48.6	0.1	70.4	32.1	0.2	41.7	36.4	55.4	55.6	60.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	48.6	0.1	70.4	32.1	0.2	41.7	36.4	55.4	55.6	60.1
Queue Length 50th (ft)	55	396	0	95	260	0	39	96	63	65	67
Queue Length 95th (ft)	#110	#734	0	#195	449	0	81	221	126	130	133
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	262	720	713	328	765	747	445	578	257	260	242
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.87	0.05	0.83	0.63	0.05	0.15	0.67	0.36	0.37	0.42

Intersection Summary

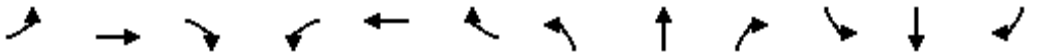
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	598	36	258	458	39	49	12	368	157	21	97
Future Volume (vph)	152	598	36	258	458	39	49	12	368	157	21	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1791	1583	1681	1704	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1791	1583	1681	1704	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	160	629	38	272	482	41	52	13	387	165	22	102
RTOR Reduction (vph)	0	0	23	0	0	24	0	0	209	0	0	0
Lane Group Flow (vph)	160	629	15	272	482	17	0	65	178	92	95	102
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	8.0	40.4	40.4	10.1	43.0	43.0		15.8	15.8	11.8	11.8	11.8
Effective Green, g (s)	8.0	40.4	40.4	10.1	43.0	43.0		15.8	15.8	11.8	11.8	11.8
Actuated g/C Ratio	0.08	0.38	0.38	0.10	0.41	0.41		0.15	0.15	0.11	0.11	0.11
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	260	712	605	328	758	644		267	236	187	190	176
v/s Ratio Prot	0.05	c0.34		c0.08	c0.26			0.04		0.05	0.06	
v/s Ratio Perm			0.01			0.01			c0.11			c0.06
v/c Ratio	0.62	0.88	0.02	0.83	0.64	0.03		0.24	0.75	0.49	0.50	0.58
Uniform Delay, d1	47.3	30.4	20.3	46.9	25.0	18.8		39.6	43.0	44.1	44.1	44.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	12.5	0.0	15.7	1.8	0.0		0.5	12.8	2.0	2.1	4.6
Delay (s)	51.6	42.9	20.3	62.7	26.8	18.8		40.1	55.8	46.1	46.2	49.1
Level of Service	D	D	C	E	C	B		D	E	D	D	D
Approach Delay (s)		43.5			38.6			53.5			47.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	105.6	Sum of lost time (s)	27.5
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	523	6	14	440	345	3	1	22	217	7	168
Future Volume (Veh/h)	128	523	6	14	440	345	3	1	22	217	7	168
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	139	568	7	15	478	375	3	1	24	236	8	183
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	853			575			1453	1732	572	1378	1361	478
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	853			575			1453	1732	572	1378	1361	478
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	82			98			95	99	95	0	93	69
cM capacity (veh/h)	786			998			61	71	520	98	120	587

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	139	575	15	478	375	28	427
Volume Left	139	0	15	0	0	3	236
Volume Right	0	7	0	0	375	24	183
cSH	786	1700	998	1700	1700	255	157
Volume to Capacity	0.18	0.34	0.02	0.28	0.22	0.11	2.72
Queue Length 95th (ft)	16	0	1	0	0	9	949
Control Delay (s)	10.6	0.0	8.7	0.0	0.0	20.8	835.5
Lane LOS	B		A			C	F
Approach Delay (s)	2.1		0.1			20.8	835.5
Approach LOS						C	F

Intersection Summary				
Average Delay	176.2			
Intersection Capacity Utilization	60.3%	ICU Level of Service		B
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	162	363	418	262	184	200	261	267	182	213	335	290
Average Queue (ft)	15	218	259	50	90	109	132	144	23	117	145	163
95th Queue (ft)	80	331	376	155	159	180	225	240	98	188	282	274
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)		8	0	0				4	0	0	0	
Queuing Penalty (veh)		1	1	0				2	0	0	1	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	137	54
Average Queue (ft)	60	9
95th Queue (ft)	118	34
Link Distance (ft)	192	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)	4	
Queuing Penalty (veh)	1	

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	388	409	188	142	244	230	174	454
Average Queue (ft)	225	245	81	54	105	100	134	181
95th Queue (ft)	361	377	145	105	198	197	203	365
Link Distance (ft)	650	650			701	701		625
Upstream Blk Time (%)								0
Queuing Penalty (veh)								0
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)		0		0	1		8	7
Queuing Penalty (veh)		0		0	1		34	16

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	489	507	218	327	327	211	427	104
Average Queue (ft)	236	253	63	194	99	56	231	41
95th Queue (ft)	420	428	122	313	246	177	381	84
Link Distance (ft)	701	701	701		860	860		495
Upstream Blk Time (%)	0	0					1	
Queuing Penalty (veh)	0	0					0	
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)				2	0		1	
Queuing Penalty (veh)				6	0		1	

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	L	T	R	LT	R	L	LT
Maximum Queue (ft)	110	425	851	250	167	194	370	225	108	231	124	176
Average Queue (ft)	45	161	465	52	79	108	204	39	39	110	47	74
95th Queue (ft)	91	414	917	196	145	171	334	149	86	195	97	141
Link Distance (ft)			2587			1225	1225		2008			194
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	400	400		225	250			200		700	135	
Storage Blk Time (%)		0	35	0			10	0			0	1
Queuing Penalty (veh)		0	65	0			4	0			0	3

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	SB
Directions Served	R
Maximum Queue (ft)	154
Average Queue (ft)	67
95th Queue (ft)	131
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	135
Storage Blk Time (%)	1
Queuing Penalty (veh)	1

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	T	R	LTR	LT	R
Maximum Queue (ft)	96	28	2	33	45	1473	240
Average Queue (ft)	42	5	0	6	15	1007	199
95th Queue (ft)	80	20	2	25	37	1830	336
Link Distance (ft)			1476		644	1477	
Upstream Blk Time (%)						33	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)	200	200		200			215
Storage Blk Time (%)						83	0
Queuing Penalty (veh)						139	1

Network Summary

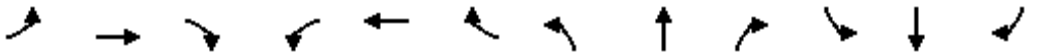
Network wide Queuing Penalty: 277

Appendix F
SYNCHRO Analysis of 2030 Total Future Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	44	848	673	630	908	41	254	258	387	85	36
v/c Ratio	0.41	0.82	0.43	0.90	0.53	0.05	0.87	0.87	0.66	0.73	0.10
Control Delay	61.4	44.1	0.8	51.1	24.3	0.1	72.8	73.3	11.1	84.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	44.1	0.8	51.1	24.3	0.1	72.8	73.3	11.1	84.0	0.6
Queue Length 50th (ft)	30	297	0	185	292	0	184	187	8	60	0
Queue Length 95th (ft)	68	#384	0	#312	389	m0	#327	#331	100	#143	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	112	1041	1583	717	1719	873	305	308	593	117	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.81	0.43	0.88	0.53	0.05	0.83	0.84	0.65	0.73	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	763	606	567	817	37	423	38	348	39	38	32
Future Volume (vph)	40	763	606	567	817	37	423	38	348	39	38	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1699	1583		1817	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1699	1583		1817	1583
Peak-hour factor, 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
Adj. Flow (vph)	44	848	673	630	908	41	470	42	387	43	42	36
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	308	0	0	34
Lane Group Flow (vph)	44	848	673	630	908	19	254	258	79	0	85	2
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	4.2	32.3	110.0	22.5	50.1	50.1	19.1	19.1	19.1		7.1	7.1
Effective Green, g (s)	4.2	32.3	110.0	22.5	50.1	50.1	19.1	19.1	19.1		7.1	7.1
Actuated g/C Ratio	0.04	0.29	1.00	0.20	0.46	0.46	0.17	0.17	0.17		0.06	0.06
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	67	1039	1583	702	1611	720	291	295	274		117	102
v/s Ratio Prot	0.02	c0.24		c0.18	0.26		0.15	c0.15			0.05	
v/s Ratio Perm			c0.43			0.01			0.05			0.00
v/c Ratio	0.66	0.82	0.43	0.90	0.56	0.03	0.87	0.87	0.29		0.73	0.02
Uniform Delay, d1	52.2	36.1	0.0	42.6	21.9	16.5	44.3	44.3	39.5		50.5	48.2
Progression Factor	1.00	1.00	1.00	0.85	1.09	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	20.8	7.1	0.8	11.9	1.2	0.1	23.8	23.7	0.6		20.0	0.1
Delay (s)	73.0	43.2	0.8	48.2	25.1	16.6	68.0	68.0	40.1		70.5	48.3
Level of Service	E	D	A	D	C	B	E	E	D		E	D
Approach Delay (s)		25.8			34.1			56.0			63.9	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	881	419	41	1313	333	283
v/c Ratio	0.50	0.41	0.36	0.59	0.79	0.56
Control Delay	21.6	10.7	48.6	8.6	52.5	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	10.7	48.6	8.6	52.5	17.8
Queue Length 50th (ft)	307	176	26	117	222	66
Queue Length 95th (ft)	391	m220	m54	306	287	130
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1750	1022	114	2228	555	613
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.41	0.36	0.59	0.60	0.46

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	1	774	369	36	1155	293	249
Future Volume (vph)	1	774	369	36	1155	293	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3539	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3377	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1	880	419	41	1312	333	283
RTOR Reduction (vph)	0	0	208	0	0	0	130
Lane Group Flow (vph)	0	881	211	41	1313	333	153
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		55.3	55.3	6.0	69.3	26.2	26.2
Effective Green, g (s)		55.3	55.3	6.0	69.3	26.2	26.2
Actuated g/C Ratio		0.50	0.50	0.05	0.63	0.24	0.24
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1697	795	96	2229	421	377
v/s Ratio Prot				0.02	c0.37	c0.19	
v/s Ratio Perm		0.26	0.13				0.10
v/c Ratio		0.52	0.26	0.43	0.59	0.79	0.41
Uniform Delay, d1		18.4	15.7	50.3	12.0	39.3	35.3
Progression Factor		1.06	4.96	0.83	0.58	1.00	1.00
Incremental Delay, d2		0.7	0.5	2.6	1.0	9.8	0.7
Delay (s)		20.3	78.3	44.3	7.9	49.1	36.1
Level of Service		C	E	D	A	D	D
Approach Delay (s)		39.0			9.0	43.1	
Approach LOS		D			A	D	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	854	239	190	767	494	94
v/c Ratio	0.71	0.33	0.82	0.38	0.90	0.17
Control Delay	41.3	13.6	74.4	14.6	57.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.3	13.6	74.4	14.6	57.3	6.0
Queue Length 50th (ft)	308	91	130	158	322	0
Queue Length 95th (ft)	404	150	#258	206	#494	36
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1216	725	237	1994	595	594
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.33	0.80	0.38	0.83	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	5	790	222	177	713	459	87
Future Volume (vph)	5	790	222	177	713	459	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3364	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	849	239	190	767	494	94
RTOR Reduction (vph)	0	0	153	0	0	0	65
Lane Group Flow (vph)	0	854	86	190	767	494	29
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		39.6	39.6	14.4	62.0	34.0	34.0
Effective Green, g (s)		39.6	39.6	14.4	62.0	34.0	34.0
Actuated g/C Ratio		0.36	0.36	0.13	0.56	0.31	0.31
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1211	569	231	1994	547	489
v/s Ratio Prot				c0.11	0.22	c0.28	
v/s Ratio Perm		c0.25	0.05				0.02
v/c Ratio		0.71	0.15	0.82	0.38	0.90	0.06
Uniform Delay, d1		30.2	23.8	46.6	13.4	36.4	26.7
Progression Factor		1.21	3.60	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.1	0.5	20.5	0.6	18.2	0.1
Delay (s)		39.8	86.3	67.0	13.9	54.6	26.8
Level of Service		D	F	E	B	D	C
Approach Delay (s)		49.9			24.5	50.2	
Approach LOS		D			C	D	

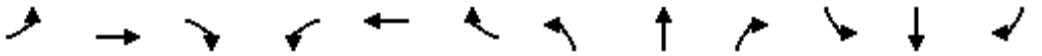
Intersection Summary			
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	199	658	79	606	864	51	50	319	113	115	124
v/c Ratio	0.84	0.89	0.11	0.87	0.86	0.06	0.36	0.78	0.62	0.62	0.72
Control Delay	90.0	52.7	0.3	65.3	37.8	0.1	65.2	20.4	72.3	72.3	80.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.0	52.7	0.3	65.3	37.8	0.1	65.2	20.4	72.3	72.3	80.8
Queue Length 50th (ft)	89	517	0	264	617	0	42	6	98	100	104
Queue Length 95th (ft)	#162	#760	0	#374	#893	0	80	82	169	171	#187
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	237	772	764	698	1029	933	359	565	206	209	194
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.85	0.10	0.87	0.84	0.05	0.14	0.56	0.55	0.55	0.64

Intersection Summary

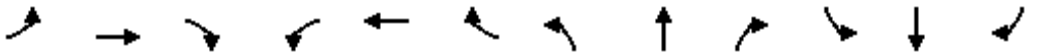
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	566	68	521	743	44	30	13	274	173	23	107
Future Volume (vph)	171	566	68	521	743	44	30	13	274	173	23	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1800	1583	1681	1704	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1800	1583	1681	1704	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	199	658	79	606	864	51	35	15	319	201	27	124
RTOR Reduction (vph)	0	0	48	0	0	24	0	0	288	0	0	0
Lane Group Flow (vph)	199	658	31	606	864	27	0	50	31	113	115	124
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	9.0	52.1	52.1	26.6	70.2	70.2		10.2	10.2	14.3	14.3	14.3
Effective Green, g (s)	9.0	52.1	52.1	26.6	70.2	70.2		10.2	10.2	14.3	14.3	14.3
Actuated g/C Ratio	0.07	0.40	0.40	0.20	0.54	0.54		0.08	0.08	0.11	0.11	0.11
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	236	742	631	698	1000	850		140	123	183	186	173
v/s Ratio Prot	0.06	0.35		c0.18	c0.46			c0.03		0.07	0.07	
v/s Ratio Perm			0.02			0.02			0.02			c0.08
v/c Ratio	0.84	0.89	0.05	0.87	0.86	0.03		0.36	0.25	0.62	0.62	0.72
Uniform Delay, d1	60.2	36.6	24.1	50.4	26.1	14.2		57.1	56.7	55.6	55.6	56.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.0	12.4	0.0	11.1	7.9	0.0		1.6	1.1	6.1	6.0	13.2
Delay (s)	83.2	48.9	24.1	61.5	34.0	14.3		58.7	57.8	61.7	61.6	69.5
Level of Service	F	D	C	E	C	B		E	E	E	E	E
Approach Delay (s)		54.1			44.3			57.9			64.4	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	51.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	130.7	Sum of lost time (s)	27.5
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	566	16	29	546	324	7	0	24	138	2	140
Future Volume (Veh/h)	188	566	16	29	546	324	7	0	24	138	2	140
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	221	666	19	34	642	381	8	0	28	162	2	165
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1023			685			1911	2208	676	1846	1837	642
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1023			685			1911	2208	676	1846	1837	642
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	67			96			66	100	94	0	96	65
cM capacity (veh/h)	679			908			24	29	454	39	49	474

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	221	685	34	642	381	36	329
Volume Left	221	0	34	0	0	8	162
Volume Right	0	19	0	0	381	28	165
cSH	679	1700	908	1700	1700	90	73
Volume to Capacity	0.33	0.40	0.04	0.38	0.22	0.40	4.48
Queue Length 95th (ft)	35	0	3	0	0	40	Err
Control Delay (s)	12.8	0.0	9.1	0.0	0.0	69.0	Err
Lane LOS	B		A			F	F
Approach Delay (s)	3.1		0.3			69.0	Err
Approach LOS						F	F

Intersection Summary				
Average Delay	1415.5			
Intersection Capacity Utilization	63.6%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	194	534	728	398	309	315	324	319	199	240	379	228
Average Queue (ft)	34	214	277	196	171	184	170	183	33	120	146	97
95th Queue (ft)	119	454	568	352	272	283	271	278	126	205	292	192
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)		0	0								0	
Queuing Penalty (veh)		0	0								0	
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)		5	1	0	0	0	0	9	0	0	1	
Queuing Penalty (veh)		2	9	0	0	1	0	3	0	1	2	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	142	98
Average Queue (ft)	55	16
95th Queue (ft)	113	52
Link Distance (ft)	192	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)	3	0
Queuing Penalty (veh)	1	0

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	288	292	143	138	333	295	174	458
Average Queue (ft)	111	133	46	37	143	111	150	169
95th Queue (ft)	258	274	100	100	272	225	199	383
Link Distance (ft)	650	650			701	701		625
Upstream Blk Time (%)								0
Queuing Penalty (veh)								0
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)				0	4		17	0
Queuing Penalty (veh)				0	2		44	1

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	357	351	142	263	308	228	475	96
Average Queue (ft)	190	205	58	126	145	82	265	32
95th Queue (ft)	332	338	118	210	254	178	415	74
Link Distance (ft)	701	701	701		860	860		495
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)					0		0	
Queuing Penalty (veh)					0		0	

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	L	T	R	LT	R	L	LT
Maximum Queue (ft)	146	424	741	250	274	456	670	225	98	194	155	207
Average Queue (ft)	62	136	333	70	172	206	311	35	34	72	61	97
95th Queue (ft)	127	329	620	223	269	339	577	147	79	138	123	184
Link Distance (ft)			2587			1225	1225		2008			194
Upstream Blk Time (%)												2
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	400	400		225	250			200		700	135	
Storage Blk Time (%)		0	21	0	1	3	19	0			0	4
Queuing Penalty (veh)		0	51	0	2	10	9	0			1	9

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	SB
Directions Served	R
Maximum Queue (ft)	158
Average Queue (ft)	87
95th Queue (ft)	158
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	135
Storage Blk Time (%)	3
Queuing Penalty (veh)	6

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	LT	R
Maximum Queue (ft)	151	2	31	4	53	80	1452	240
Average Queue (ft)	61	0	9	0	12	21	1027	177
95th Queue (ft)	113	2	28	3	39	61	1830	342
Link Distance (ft)		1287		1476		644	1477	
Upstream Blk Time (%)							40	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)	200		200		200			215
Storage Blk Time (%)	0						87	0
Queuing Penalty (veh)	0						122	1

Network Summary

Network wide Queuing Penalty: 277

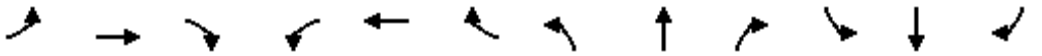
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	19	891	421	486	786	44	265	269	685	87	21
v/c Ratio	0.22	0.99	0.27	1.04	0.54	0.06	0.54	0.54	1.06	0.89	0.06
Control Delay	56.6	69.1	0.4	97.4	20.0	0.1	37.8	37.8	76.4	117.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.6	69.1	0.4	97.4	20.0	0.1	37.8	37.8	76.4	117.0	0.3
Queue Length 50th (ft)	13	330	0	~171	113	0	165	168	~391	62	0
Queue Length 95th (ft)	38	#468	0	#288	271	m0	254	258	#621	#160	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	86	900	1583	468	1461	772	489	494	647	98	344
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.99	0.27	1.04	0.54	0.06	0.54	0.54	1.06	0.89	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	864	408	471	762	43	467	51	664	49	35	20
Future Volume (vph)	18	864	408	471	762	43	467	51	664	49	35	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1701	1583		1810	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1701	1583		1810	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	891	421	486	786	44	481	53	685	51	36	21
RTOR Reduction (vph)	0	0	0	0	0	28	0	0	186	0	0	20
Lane Group Flow (vph)	19	891	421	486	786	16	265	269	499	0	87	1
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	2.2	28.0	110.0	15.0	40.3	40.3	32.0	32.0	32.0		6.0	6.0
Effective Green, g (s)	2.2	28.0	110.0	15.0	40.3	40.3	32.0	32.0	32.0		6.0	6.0
Actuated g/C Ratio	0.02	0.25	1.00	0.14	0.37	0.37	0.29	0.29	0.29		0.05	0.05
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	35	900	1583	468	1296	579	489	494	460		98	86
v/s Ratio Prot	0.01	c0.25		c0.14	0.22		0.16	0.16			c0.05	
v/s Ratio Perm			0.27			0.01			c0.31			0.00
v/c Ratio	0.54	0.99	0.27	1.04	0.61	0.03	0.54	0.54	1.08		0.89	0.01
Uniform Delay, d1	53.4	40.9	0.0	47.5	28.4	22.3	32.8	32.9	39.0		51.7	49.2
Progression Factor	1.00	1.00	1.00	1.05	0.73	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	16.1	27.7	0.4	48.9	1.8	0.1	1.2	1.2	66.4		55.8	0.1
Delay (s)	69.5	68.5	0.4	98.6	22.4	22.4	34.1	34.1	105.4		107.4	49.3
Level of Service	E	E	A	F	C	C	C	C	F		F	D
Approach Delay (s)		47.0			50.5			74.2			96.1	
Approach LOS		D			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	57.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1200	404	65	1027	359	464
v/c Ratio	0.71	0.41	0.60	0.47	0.79	0.91
Control Delay	16.2	1.6	62.0	15.9	51.1	49.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	1.6	62.0	15.9	51.1	49.0
Queue Length 50th (ft)	188	2	41	293	228	220
Queue Length 95th (ft)	m186	m1	m#85	m340	330	#387
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1694	997	109	2166	522	569
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.41	0.60	0.47	0.69	0.82

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	5	1123	380	61	965	337	436
Future Volume (vph)	5	1123	380	61	965	337	436
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3365	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	5	1195	404	65	1027	359	464
RTOR Reduction (vph)	0	0	207	0	0	0	108
Lane Group Flow (vph)	0	1200	197	65	1027	359	356
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		53.7	53.7	5.6	67.3	28.2	28.2
Effective Green, g (s)		53.7	53.7	5.6	67.3	28.2	28.2
Actuated g/C Ratio		0.49	0.49	0.05	0.61	0.26	0.26
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1642	772	90	2165	453	405
v/s Ratio Prot				0.04	c0.29	0.20	
v/s Ratio Perm		c0.36	0.12				c0.22
v/c Ratio		0.73	0.26	0.72	0.47	0.79	0.88
Uniform Delay, d1		22.4	16.5	51.4	11.7	38.2	39.3
Progression Factor		0.68	0.77	0.82	1.22	1.00	1.00
Incremental Delay, d2		0.3	0.1	21.6	0.6	9.2	19.0
Delay (s)		15.5	12.7	63.5	14.9	47.4	58.3
Level of Service		B	B	E	B	D	E
Approach Delay (s)		14.8			17.8	53.5	
Approach LOS		B			B	D	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1333	455	265	727	367	110
v/c Ratio	0.89	0.48	1.03	0.31	0.99	0.26
Control Delay	36.0	7.4	111.3	8.1	90.5	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	7.4	111.3	8.1	90.5	8.8
Queue Length 50th (ft)	311	46	~201	100	~280	0
Queue Length 95th (ft)	412	m80	#364	128	#464	47
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1525	953	257	2380	369	416
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.48	1.03	0.31	0.99	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	9	1230	423	246	676	341	102
Future Volume (vph)	9	1230	423	246	676	341	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3355	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	10	1323	455	265	727	367	110
RTOR Reduction (vph)	0	0	237	0	0	0	87
Lane Group Flow (vph)	0	1333	218	265	727	367	23
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		49.1	49.1	16.0	73.1	22.9	22.9
Effective Green, g (s)		49.1	49.1	16.0	73.1	22.9	22.9
Actuated g/C Ratio		0.45	0.45	0.15	0.66	0.21	0.21
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1497	706	257	2351	368	329
v/s Ratio Prot				c0.15	0.21	c0.21	
v/s Ratio Perm		c0.40	0.14				0.01
v/c Ratio		0.89	0.31	1.03	0.31	1.00	0.07
Uniform Delay, d1		28.0	19.6	47.0	7.8	43.5	35.0
Progression Factor		1.05	2.49	1.00	1.00	1.00	1.00
Incremental Delay, d2		6.2	0.8	64.4	0.3	45.9	0.1
Delay (s)		35.6	49.4	111.4	8.1	89.4	35.1
Level of Service		D	D	F	A	F	D
Approach Delay (s)		39.1			35.7	76.9	
Approach LOS		D			D	E	

Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

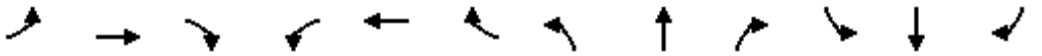
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	160	629	38	522	482	41	65	618	92	95	102
v/c Ratio	0.62	1.00	0.06	0.98	0.62	0.06	0.16	1.05	0.60	0.61	0.70
Control Delay	77.4	85.7	0.2	97.2	38.5	0.2	47.3	78.1	80.5	81.0	90.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.4	85.7	0.2	97.2	38.5	0.2	47.3	78.1	80.5	81.0	90.2
Queue Length 50th (ft)	78	~628	0	264	370	0	51	~419	91	93	97
Queue Length 95th (ft)	119	#893	0	#391	502	0	96	#667	156	162	164
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	279	626	654	530	780	739	414	591	182	184	171
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	1.00	0.06	0.98	0.62	0.06	0.16	1.05	0.51	0.52	0.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

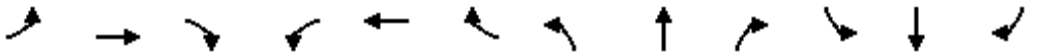
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	598	36	496	458	39	49	12	587	157	21	97
Future Volume (vph)	152	598	36	496	458	39	49	12	587	157	21	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1791	1583	1681	1704	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1791	1583	1681	1704	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	160	629	38	522	482	41	52	13	618	165	22	102
RTOR Reduction (vph)	0	0	25	0	0	24	0	0	225	0	0	0
Lane Group Flow (vph)	160	629	13	522	482	17	0	65	393	92	95	102
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	11.1	49.6	49.6	22.8	61.8	61.8		34.1	34.1	13.6	13.6	13.6
Effective Green, g (s)	11.1	49.6	49.6	22.8	61.8	61.8		34.1	34.1	13.6	13.6	13.6
Actuated g/C Ratio	0.08	0.34	0.34	0.15	0.42	0.42		0.23	0.23	0.09	0.09	0.09
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	258	626	531	530	780	662		413	365	154	157	145
v/s Ratio Prot	0.05	c0.34		c0.15	0.26			0.04		0.05	0.06	
v/s Ratio Perm			0.01			0.01			c0.25			c0.06
v/c Ratio	0.62	1.00	0.02	0.98	0.62	0.03		0.16	1.08	0.60	0.61	0.70
Uniform Delay, d1	66.2	49.0	32.8	62.2	33.6	25.2		45.3	56.7	64.4	64.4	65.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.6	37.2	0.0	34.9	1.5	0.0		0.2	68.8	6.1	6.4	14.4
Delay (s)	70.8	86.2	32.8	97.2	35.1	25.2		45.5	125.6	70.5	70.9	79.4
Level of Service	E	F	C	F	D	C		D	F	E	E	E
Approach Delay (s)		80.7			65.7			118.0			73.8	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	83.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	147.6	Sum of lost time (s)	27.5
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	523	6	14	440	430	3	1	22	217	7	168
Future Volume (Veh/h)	145	523	6	14	440	430	3	1	22	217	7	168
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	158	568	7	15	478	467	3	1	24	236	8	183
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	945			575			1491	1862	572	1416	1399	478
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	945			575			1491	1862	572	1416	1399	478
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	78			98			95	98	95	0	93	69
cM capacity (veh/h)	726			998			55	56	520	89	108	587

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	158	575	15	478	467	28	427
Volume Left	158	0	15	0	0	3	236
Volume Right	0	7	0	0	467	24	183
cSH	726	1700	998	1700	1700	236	143
Volume to Capacity	0.22	0.34	0.02	0.28	0.27	0.12	2.99
Queue Length 95th (ft)	21	0	1	0	0	10	989
Control Delay (s)	11.3	0.0	8.7	0.0	0.0	22.3	961.2
Lane LOS	B		A			C	F
Approach Delay (s)	2.4		0.1			22.3	961.2
Approach LOS						C	F

Intersection Summary				
Average Delay	192.3			
Intersection Capacity Utilization	60.3%	ICU Level of Service		B
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	249	664	756	450	353	361	454	435	112	220	235	482
Average Queue (ft)	32	360	415	180	249	254	196	165	17	116	135	279
95th Queue (ft)	156	664	757	469	386	395	500	404	64	186	207	454
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)							1	0				
Queuing Penalty (veh)							7	1				
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)	0	32	11	0	5	11	0	1	0	0	0	
Queuing Penalty (veh)	0	6	47	1	19	43	1	1	0	0	1	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	154	79
Average Queue (ft)	69	12
95th Queue (ft)	136	47
Link Distance (ft)	192	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)	8	
Queuing Penalty (veh)	2	

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	388	405	166	182	332	258	175	617
Average Queue (ft)	225	250	74	65	160	145	161	323
95th Queue (ft)	340	367	127	139	261	235	204	607
Link Distance (ft)	650	650			701	701		625
Upstream Blk Time (%)								3
Queuing Penalty (veh)								0
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)		0		0	4		23	11
Queuing Penalty (veh)		0		0	3		99	37

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	478	476	248	345	491	400	448	237
Average Queue (ft)	251	265	94	227	163	101	269	54
95th Queue (ft)	433	440	186	370	463	378	440	182
Link Distance (ft)	701	701	701		860	860		495
Upstream Blk Time (%)					0	0	2	1
Queuing Penalty (veh)					0	0	0	0
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)				8	0		2	1
Queuing Penalty (veh)				26	0		2	3

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	L	T	R	LT	R	L	LT
Maximum Queue (ft)	143	425	1627	250	275	533	446	225	393	624	153	204
Average Queue (ft)	58	288	1044	61	220	292	242	39	72	354	54	107
95th Queue (ft)	119	568	1961	219	312	508	388	153	329	631	121	187
Link Distance (ft)			2587			1225	1225		2008			194
Upstream Blk Time (%)			3									3
Queuing Penalty (veh)			0									0
Storage Bay Dist (ft)	400	400		225	250			200		700	135	
Storage Blk Time (%)		0	59	0	4	16	16	0	0	1	0	6
Queuing Penalty (veh)		0	110	0	10	39	6	0	0	1	0	10

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	SB
Directions Served	R
Maximum Queue (ft)	160
Average Queue (ft)	84
95th Queue (ft)	159
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	135
Storage Blk Time (%)	5
Queuing Penalty (veh)	8

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	WB	WB	NB	SB	SB
Directions Served	L	L	R	LTR	LT	R
Maximum Queue (ft)	119	27	52	44	1520	240
Average Queue (ft)	49	5	13	15	1287	215
95th Queue (ft)	94	20	38	38	1849	332
Link Distance (ft)				644	1477	
Upstream Blk Time (%)					64	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	200	200	200			215
Storage Blk Time (%)					96	0
Queuing Penalty (veh)					161	1

Network Summary

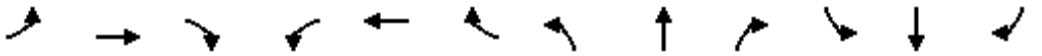
Network wide Queuing Penalty: 644

Appendix G
SYNCHRO Analysis of 2036 Background Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	44	900	669	531	964	41	258	262	344	85	36
v/c Ratio	0.41	0.76	0.42	0.87	0.55	0.05	0.85	0.86	0.62	0.66	0.10
Control Delay	61.4	39.7	0.8	52.1	24.0	0.1	69.2	69.4	10.2	74.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	39.7	0.8	52.1	24.0	0.1	69.2	69.4	10.2	74.6	0.5
Queue Length 50th (ft)	30	317	0	158	313	0	185	188	6	59	0
Queue Length 95th (ft)	68	#425	0	#266	420	m0	#322	#327	90	#131	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	112	1178	1583	626	1764	891	320	324	571	132	368
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.76	0.42	0.85	0.55	0.05	0.81	0.81	0.60	0.64	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	810	602	478	868	37	430	38	310	39	38	32
Future Volume (vph)	40	810	602	478	868	37	430	38	310	39	38	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1698	1583		1817	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1698	1583		1817	1583
Peak-hour factor, 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
Adj. Flow (vph)	44	900	669	531	964	41	478	42	344	43	42	36
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	273	0	0	34
Lane Group Flow (vph)	44	900	669	531	964	19	258	262	71	0	85	2
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	4.2	35.3	110.0	19.5	50.1	50.1	19.8	19.8	19.8		6.4	6.4
Effective Green, g (s)	4.2	35.3	110.0	19.5	50.1	50.1	19.8	19.8	19.8		6.4	6.4
Actuated g/C Ratio	0.04	0.32	1.00	0.18	0.46	0.46	0.18	0.18	0.18		0.06	0.06
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	67	1135	1583	608	1611	720	302	305	284		105	92
v/s Ratio Prot	0.02	c0.25		c0.15	0.27		0.15	c0.15			0.05	
v/s Ratio Perm			c0.42			0.01			0.04			0.00
v/c Ratio	0.66	0.79	0.42	0.87	0.60	0.03	0.85	0.86	0.25		0.81	0.02
Uniform Delay, d1	52.2	34.0	0.0	44.0	22.4	16.5	43.7	43.7	38.7		51.2	48.9
Progression Factor	1.00	1.00	1.00	0.87	1.04	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	20.8	5.7	0.8	11.2	1.4	0.1	20.3	20.6	0.5		35.1	0.1
Delay (s)	73.0	39.7	0.8	49.4	24.6	16.6	64.0	64.4	39.2		86.3	49.0
Level of Service	E	D	A	D	C	B	E	E	D		F	D
Approach Delay (s)		24.5			33.0			54.2			75.2	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	875	439	43	1301	307	301
v/c Ratio	0.47	0.41	0.36	0.57	0.78	0.57
Control Delay	20.2	10.8	47.6	8.0	53.4	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	10.8	47.6	8.0	53.4	14.6
Queue Length 50th (ft)	306	196	27	115	205	47
Queue Length 95th (ft)	390	248	m55	310	269	114
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1875	1074	133	2282	522	622
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.41	0.32	0.57	0.59	0.48

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	1	769	386	38	1145	270	265
Future Volume (vph)	1	769	386	38	1145	270	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3539	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3377	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1	874	439	43	1301	307	301
RTOR Reduction (vph)	0	0	208	0	0	0	171
Lane Group Flow (vph)	0	875	231	43	1301	307	130
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		57.9	57.9	5.1	71.0	24.5	24.5
Effective Green, g (s)		57.9	57.9	5.1	71.0	24.5	24.5
Actuated g/C Ratio		0.53	0.53	0.05	0.65	0.22	0.22
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1777	833	82	2284	394	352
v/s Ratio Prot				0.02	c0.37	c0.17	
v/s Ratio Perm		0.26	0.15				0.08
v/c Ratio		0.49	0.28	0.52	0.57	0.78	0.37
Uniform Delay, d1		16.7	14.4	51.3	10.9	40.2	36.2
Progression Factor		1.12	5.09	0.83	0.59	1.00	1.00
Incremental Delay, d2		0.7	0.6	5.1	0.9	9.4	0.7
Delay (s)		19.3	74.2	47.8	7.4	49.6	36.9
Level of Service		B	E	D	A	D	D
Approach Delay (s)		37.6			8.6	43.3	
Approach LOS		D			A	D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	886	218	202	741	509	99
v/c Ratio	0.75	0.31	0.85	0.37	0.92	0.18
Control Delay	45.2	13.5	76.5	14.4	60.5	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.2	13.5	76.5	14.4	60.5	6.1
Queue Length 50th (ft)	325	83	141	152	336	0
Queue Length 95th (ft)	417	131	#267	193	#529	37
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1192	701	246	1989	580	585
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.31	0.82	0.37	0.88	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	5	819	203	188	689	473	92
Future Volume (vph)	5	819	203	188	689	473	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3365	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	881	218	202	741	509	99
RTOR Reduction (vph)	0	0	141	0	0	0	68
Lane Group Flow (vph)	0	886	77	202	741	509	31
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		38.8	38.8	14.9	61.7	34.3	34.3
Effective Green, g (s)		38.8	38.8	14.9	61.7	34.3	34.3
Actuated g/C Ratio		0.35	0.35	0.14	0.56	0.31	0.31
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1186	558	239	1985	551	493
v/s Ratio Prot				c0.11	0.21	c0.29	
v/s Ratio Perm		c0.26	0.05				0.02
v/c Ratio		0.75	0.14	0.85	0.37	0.92	0.06
Uniform Delay, d1		31.3	24.2	46.4	13.4	36.6	26.6
Progression Factor		1.28	3.46	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.9	0.5	23.0	0.5	21.3	0.1
Delay (s)		44.1	84.2	69.4	14.0	57.9	26.6
Level of Service		D	F	E	B	E	C
Approach Delay (s)		52.0			25.8	52.8	
Approach LOS		D			C	D	

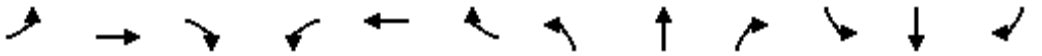
Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	199	741	49	426	973	51	36	233	113	115	124
v/c Ratio	0.95	0.85	0.06	0.84	0.94	0.05	0.30	0.72	0.62	0.62	0.72
Control Delay	112.1	42.9	0.1	70.9	44.9	0.1	64.7	20.3	71.8	71.6	80.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.1	42.9	0.1	70.9	44.9	0.1	64.7	20.3	71.8	71.6	80.3
Queue Length 50th (ft)	89	556	0	185	750	0	30	0	97	98	103
Queue Length 95th (ft)	#168	#797	0	#265	#1074	0	63	66	166	168	#180
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	209	869	837	510	1037	939	359	500	205	208	193
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.85	0.06	0.84	0.94	0.05	0.10	0.47	0.55	0.55	0.64

Intersection Summary

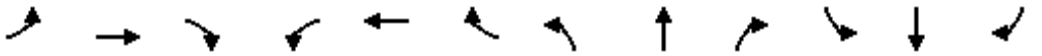
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	637	42	366	837	44	18	13	200	173	23	107
Future Volume (vph)	171	637	42	366	837	44	18	13	200	173	23	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1810	1583	1681	1704	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1810	1583	1681	1704	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	199	741	49	426	973	51	21	15	233	201	27	124
RTOR Reduction (vph)	0	0	26	0	0	23	0	0	217	0	0	0
Lane Group Flow (vph)	199	741	23	426	973	28	0	36	16	113	115	124
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	8.0	61.3	61.3	19.3	73.1	73.1		8.8	8.8	14.3	14.3	14.3
Effective Green, g (s)	8.0	61.3	61.3	19.3	73.1	73.1		8.8	8.8	14.3	14.3	14.3
Actuated g/C Ratio	0.06	0.47	0.47	0.15	0.56	0.56		0.07	0.07	0.11	0.11	0.11
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	870	739	505	1037	881		121	106	183	185	172
v/s Ratio Prot	0.06	0.40		c0.12	c0.52			c0.02		0.07	0.07	
v/s Ratio Perm			0.01			0.02			0.01			c0.08
v/c Ratio	0.95	0.85	0.03	0.84	0.94	0.03		0.30	0.15	0.62	0.62	0.72
Uniform Delay, d1	61.4	30.9	18.9	54.5	27.0	13.1		58.3	57.7	55.8	55.9	56.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	48.5	8.1	0.0	12.2	15.2	0.0		1.4	0.6	6.1	6.3	13.8
Delay (s)	109.9	39.0	18.9	66.7	42.1	13.1		59.6	58.3	61.9	62.2	70.4
Level of Service	F	D	B	E	D	B		E	E	E	E	E
Approach Delay (s)		52.3			48.3			58.5			65.0	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	52.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	131.2	Sum of lost time (s)	27.5
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	637	16	29	580	285	7	0	24	119	2	121
Future Volume (Veh/h)	150	637	16	29	580	285	7	0	24	119	2	121
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	176	749	19	34	682	335	8	0	28	140	2	142
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1017			768			1932	2196	758	1879	1870	682
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1017			768			1932	2196	758	1879	1870	682
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	74			96			69	100	93	0	96	68
cM capacity (veh/h)	682			846			26	32	407	39	51	450

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	176	768	34	682	335	36	284
Volume Left	176	0	34	0	0	8	140
Volume Right	0	19	0	0	335	28	142
cSH	682	1700	846	1700	1700	95	74
Volume to Capacity	0.26	0.45	0.04	0.40	0.20	0.38	3.86
Queue Length 95th (ft)	26	0	3	0	0	38	Err
Control Delay (s)	12.1	0.0	9.4	0.0	0.0	64.5	Err
Lane LOS	B		A			F	F
Approach Delay (s)	2.3		0.3			64.5	Err
Approach LOS						F	F

Intersection Summary				
Average Delay	1228.7			
Intersection Capacity Utilization	62.2%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	179	403	492	367	317	330	316	330	183	238	272	251
Average Queue (ft)	32	208	269	166	152	178	174	190	33	125	146	89
95th Queue (ft)	115	338	425	316	260	278	272	289	131	205	225	181
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)		5	0	0	0	0	0	10	0	0	1	
Queuing Penalty (veh)		2	3	0	0	2	0	4	0	0	2	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	125	68
Average Queue (ft)	53	12
95th Queue (ft)	102	38
Link Distance (ft)	192	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)	2	0
Queuing Penalty (veh)	1	0

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	287	285	142	126	305	258	174	408
Average Queue (ft)	101	122	48	36	130	100	147	156
95th Queue (ft)	248	265	103	91	249	209	202	346
Link Distance (ft)	650	650			701	701		625
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)					4		16	0
Queuing Penalty (veh)					1		43	1

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	364	377	150	246	249	214	472	92
Average Queue (ft)	210	227	60	133	135	83	276	31
95th Queue (ft)	345	352	119	214	226	175	414	66
Link Distance (ft)	701	701	701		860	860		495
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)							0	
Queuing Penalty (veh)							0	

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	L	T	R	LT	R	L	LT
Maximum Queue (ft)	154	396	623	250	224	472	789	225	84	120	146	198
Average Queue (ft)	62	131	302	43	122	167	387	44	26	50	58	95
95th Queue (ft)	125	318	524	171	194	345	723	172	67	94	119	178
Link Distance (ft)			2587			1225	1225		2008			194
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	400	400		225	250			200		700	135	
Storage Blk Time (%)			16	0	0	0	23	0			1	3
Queuing Penalty (veh)			36	0	0	0	10	0			1	7

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	SB
Directions Served	R
Maximum Queue (ft)	157
Average Queue (ft)	80
95th Queue (ft)	155
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	135
Storage Blk Time (%)	4
Queuing Penalty (veh)	8

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	R	LTR	LT	R
Maximum Queue (ft)	115	2	39	49	56	962	240
Average Queue (ft)	50	0	10	8	19	482	147
95th Queue (ft)	97	2	30	31	46	1043	317
Link Distance (ft)		1287			644	1477	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200		200	200			215
Storage Blk Time (%)						62	0
Queuing Penalty (veh)						75	0

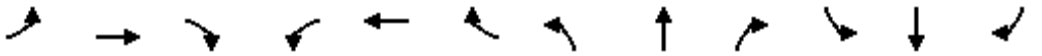
Network Summary

Network wide Queuing Penalty: 198

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	19	946	409	295	834	44	262	267	521	87	21
v/c Ratio	0.22	0.84	0.26	0.90	0.54	0.05	0.60	0.60	0.95	0.78	0.08
Control Delay	56.6	43.3	0.4	83.8	18.8	0.1	41.6	41.7	54.4	92.9	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.6	43.3	0.4	83.8	18.8	0.1	41.6	41.7	54.4	92.9	0.6
Queue Length 50th (ft)	13	325	0	101	91	0	168	171	248	62	0
Queue Length 95th (ft)	38	408	0	#188	367	m1	258	264	#460	#160	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	86	1133	1583	329	1539	803	458	463	564	112	279
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.83	0.26	0.90	0.54	0.05	0.57	0.58	0.92	0.78	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	918	397	286	809	43	462	51	505	49	35	20
Future Volume (vph)	18	918	397	286	809	43	462	51	505	49	35	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1701	1583		1810	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1701	1583		1810	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	946	409	295	834	44	476	53	521	51	36	21
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	135	0	0	20
Lane Group Flow (vph)	19	946	409	295	834	17	262	267	386	0	87	1
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	2.2	35.0	110.0	10.5	42.8	42.8	28.7	28.7	28.7		6.8	6.8
Effective Green, g (s)	2.2	35.0	110.0	10.5	42.8	42.8	28.7	28.7	28.7		6.8	6.8
Actuated g/C Ratio	0.02	0.32	1.00	0.10	0.39	0.39	0.26	0.26	0.26		0.06	0.06
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	35	1126	1583	327	1376	615	438	443	413		111	97
v/s Ratio Prot	0.01	c0.27		c0.09	c0.24		0.16	0.16			c0.05	
v/s Ratio Perm			0.26			0.01			c0.24			0.00
v/c Ratio	0.54	0.84	0.26	0.90	0.61	0.03	0.60	0.60	0.93		0.78	0.01
Uniform Delay, d1	53.4	34.9	0.0	49.2	26.9	20.8	35.6	35.7	39.7		50.9	48.5
Progression Factor	1.00	1.00	1.00	1.15	0.71	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	16.1	7.6	0.4	24.6	1.8	0.1	2.2	2.3	28.1		29.4	0.1
Delay (s)	69.5	42.5	0.4	81.1	20.9	20.8	37.8	38.0	67.9		80.3	48.5
Level of Service	E	D	A	F	C	C	D	D	E		F	D
Approach Delay (s)		30.3			36.0			52.8			74.1	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1191	412	69	995	247	491
v/c Ratio	0.72	0.42	0.64	0.47	0.52	0.93
Control Delay	18.1	1.9	64.8	17.0	37.9	52.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.1	1.9	64.8	17.0	37.9	52.5
Queue Length 50th (ft)	185	3	48	286	142	241
Queue Length 95th (ft)	m258	m9	m#91	m328	221	#432
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1662	990	107	2125	522	569
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.42	0.64	0.47	0.47	0.86

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	5	1115	387	65	935	232	462
Future Volume (vph)	5	1115	387	65	935	232	462
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3365	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	5	1186	412	69	995	247	491
RTOR Reduction (vph)	0	0	215	0	0	0	106
Lane Group Flow (vph)	0	1191	197	69	995	247	385
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		52.7	52.7	5.4	66.1	29.4	29.4
Effective Green, g (s)		52.7	52.7	5.4	66.1	29.4	29.4
Actuated g/C Ratio		0.48	0.48	0.05	0.60	0.27	0.27
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1612	758	86	2126	473	423
v/s Ratio Prot				0.04	c0.28	0.14	
v/s Ratio Perm		c0.35	0.12				c0.24
v/c Ratio		0.74	0.26	0.80	0.47	0.52	0.91
Uniform Delay, d1		23.1	17.1	51.8	12.2	34.3	39.0
Progression Factor		0.69	0.61	0.78	1.26	1.00	1.00
Incremental Delay, d2		1.7	0.5	35.3	0.6	1.0	23.0
Delay (s)		17.7	10.8	75.8	16.0	35.4	62.0
Level of Service		B	B	E	B	D	E
Approach Delay (s)		15.9			19.9	53.1	
Approach LOS		B			B	D	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1342	358	281	694	370	117
v/c Ratio	0.93	0.41	1.03	0.30	0.98	0.27
Control Delay	39.1	7.9	108.7	8.3	85.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	7.9	108.7	8.3	85.3	8.4
Queue Length 50th (ft)	332	43	~212	97	263	0
Queue Length 95th (ft)	#594	m65	#380	126	#458	47
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1462	873	273	2348	378	430
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.41	1.03	0.30	0.98	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	10	1238	333	261	645	344	109
Future Volume (vph)	10	1238	333	261	645	344	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3353	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	1331	358	281	694	370	117
RTOR Reduction (vph)	0	0	184	0	0	0	92
Lane Group Flow (vph)	0	1342	174	281	694	370	25
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		47.5	47.5	17.0	72.5	23.5	23.5
Effective Green, g (s)		47.5	47.5	17.0	72.5	23.5	23.5
Actuated g/C Ratio		0.43	0.43	0.15	0.66	0.21	0.21
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1447	683	273	2332	378	338
v/s Ratio Prot				c0.16	0.20	c0.21	
v/s Ratio Perm		c0.40	0.11				0.02
v/c Ratio		0.93	0.25	1.03	0.30	0.98	0.07
Uniform Delay, d1		29.6	19.9	46.5	8.0	43.0	34.6
Progression Factor		1.03	2.14	1.00	1.00	1.00	1.00
Incremental Delay, d2		8.2	0.6	62.2	0.3	40.2	0.1
Delay (s)		38.6	43.3	108.7	8.3	83.2	34.6
Level of Service		D	D	F	A	F	C
Approach Delay (s)		39.6			37.2	71.5	
Approach LOS		D			D	E	

Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

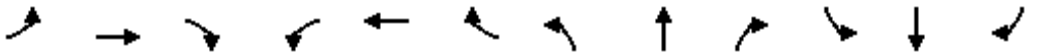
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	160	708	38	272	543	41	65	387	92	95	102
v/c Ratio	0.63	1.00	0.05	0.84	0.72	0.06	0.23	0.88	0.50	0.51	0.59
Control Delay	62.2	69.0	0.1	72.8	35.6	0.2	41.2	38.8	56.1	56.3	60.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	69.0	0.1	72.8	35.6	0.2	41.2	38.8	56.1	56.3	60.9
Queue Length 50th (ft)	56	~498	0	97	314	0	39	109	64	66	68
Queue Length 95th (ft)	#110	#868	0	#195	#539	0	81	236	126	130	133
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	258	709	704	322	754	739	437	560	252	256	238
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	1.00	0.05	0.84	0.72	0.06	0.15	0.69	0.37	0.37	0.43

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

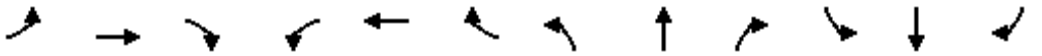
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	673	36	258	516	39	49	12	368	157	21	97
Future Volume (vph)	152	673	36	258	516	39	49	12	368	157	21	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1791	1583	1681	1704	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1791	1583	1681	1704	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	160	708	38	272	543	41	52	13	387	165	22	102
RTOR Reduction (vph)	0	0	23	0	0	24	0	0	194	0	0	0
Lane Group Flow (vph)	160	708	15	272	543	17	0	65	193	92	95	102
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	8.0	40.9	40.9	10.1	43.5	43.5		16.8	16.8	11.8	11.8	11.8
Effective Green, g (s)	8.0	40.9	40.9	10.1	43.5	43.5		16.8	16.8	11.8	11.8	11.8
Actuated g/C Ratio	0.07	0.38	0.38	0.09	0.41	0.41		0.16	0.16	0.11	0.11	0.11
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	256	711	604	323	756	642		280	248	185	187	174
v/s Ratio Prot	0.05	c0.38		c0.08	c0.29			0.04		0.05	0.06	
v/s Ratio Perm			0.01			0.01			c0.12			c0.06
v/c Ratio	0.62	1.00	0.02	0.84	0.72	0.03		0.23	0.78	0.50	0.51	0.59
Uniform Delay, d1	48.1	33.0	20.6	47.7	26.7	19.1		39.5	43.4	44.9	44.9	45.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	32.5	0.0	17.7	3.3	0.0		0.4	14.2	2.1	2.2	5.0
Delay (s)	52.8	65.5	20.7	65.4	29.9	19.1		39.9	57.6	47.0	47.1	50.3
Level of Service	D	E	C	E	C	B		D	E	D	D	D
Approach Delay (s)		61.4			40.7			55.1			48.2	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	107.1	Sum of lost time (s)	27.5
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	588	6	14	467	345	3	1	22	217	7	168
Future Volume (Veh/h)	128	588	6	14	467	345	3	1	22	217	7	168
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	139	639	7	15	508	375	3	1	24	236	8	183
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	883			646			1554	1834	642	1480	1462	508
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	883			646			1554	1834	642	1480	1462	508
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	82			98			94	98	95	0	92	68
cM capacity (veh/h)	766			939			50	61	474	83	104	565

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	139	646	15	508	375	28	427
Volume Left	139	0	15	0	0	3	236
Volume Right	0	7	0	0	375	24	183
cSH	766	1700	939	1700	1700	220	133
Volume to Capacity	0.18	0.38	0.02	0.30	0.22	0.13	3.20
Queue Length 95th (ft)	16	0	1	0	0	11	Err
Control Delay (s)	10.7	0.0	8.9	0.0	0.0	23.7	Err
Lane LOS	B		A			C	F
Approach Delay (s)	1.9		0.1			23.7	Err
Approach LOS						C	F

Intersection Summary				
Average Delay	1998.1			
Intersection Capacity Utilization	63.7%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	185	402	455	275	214	240	258	279	155	200	219	324
Average Queue (ft)	17	231	272	61	106	128	131	144	27	116	136	171
95th Queue (ft)	89	353	398	192	188	212	233	253	114	184	202	293
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)		9	1	0				4	0	0	0	
Queuing Penalty (veh)		2	2	0				2	0	0	1	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	166	98
Average Queue (ft)	69	12
95th Queue (ft)	137	52
Link Distance (ft)	192	
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)	9	0
Queuing Penalty (veh)	2	0

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	431	453	302	182	258	255	174	475
Average Queue (ft)	249	268	91	65	124	122	134	204
95th Queue (ft)	384	401	192	132	222	223	203	387
Link Distance (ft)	650	650			701	701		625
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)		0	0	0	2		7	10
Queuing Penalty (veh)		2	0	1	1		34	23

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	552	564	247	348	293	242	465	234
Average Queue (ft)	264	279	71	221	119	78	271	52
95th Queue (ft)	468	478	162	348	333	280	445	145
Link Distance (ft)	701	701	701		860	860		495
Upstream Blk Time (%)	0	0			0	0	1	0
Queuing Penalty (veh)	0	0			0	0	0	0
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)				3	0		1	0
Queuing Penalty (veh)				11	0		1	0

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	L	T	R	LT	R	L	LT
Maximum Queue (ft)	107	425	1387	250	156	173	431	205	95	225	138	180
Average Queue (ft)	43	250	847	69	81	110	232	32	34	110	47	75
95th Queue (ft)	90	543	1618	235	145	167	387	137	77	194	99	144
Link Distance (ft)			2587			1225	1225		2008			194
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	400	400		225	250			200		700	135	
Storage Blk Time (%)		0	51	0			14	0			0	1
Queuing Penalty (veh)		0	96	0			5	0			0	3

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	SB
Directions Served	R
Maximum Queue (ft)	153
Average Queue (ft)	68
95th Queue (ft)	135
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	135
Storage Blk Time (%)	1
Queuing Penalty (veh)	2

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	T	R	LTR	LT	R
Maximum Queue (ft)	118	28	2	54	50	1523	240
Average Queue (ft)	44	4	0	9	15	1236	208
95th Queue (ft)	88	19	2	34	40	1904	336
Link Distance (ft)			1476		644	1477	
Upstream Blk Time (%)						60	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)	200	200		200			215
Storage Blk Time (%)						94	0
Queuing Penalty (veh)						158	1

Network Summary

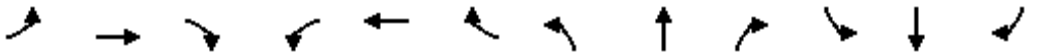
Network wide Queuing Penalty: 347

Appendix H
SYNCHRO Analysis of 2036 Total Future Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	44	900	712	660	964	41	269	271	407	85	36
v/c Ratio	0.41	0.87	0.45	0.93	0.56	0.05	0.90	0.90	0.71	0.80	0.10
Control Delay	61.4	47.3	0.9	55.4	22.8	0.1	76.8	76.3	14.7	98.6	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	47.3	0.9	55.4	22.8	0.1	76.8	76.3	14.7	98.6	0.6
Queue Length 50th (ft)	30	317	0	201	311	0	196	197	31	61	0
Queue Length 95th (ft)	68	#425	0	#337	412	m0	#353	#354	137	#155	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	112	1036	1583	717	1727	876	305	308	579	106	349
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.87	0.45	0.92	0.56	0.05	0.88	0.88	0.70	0.80	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	810	641	594	868	37	448	38	366	39	38	32
Future Volume (vph)	40	810	641	594	868	37	448	38	366	39	38	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1698	1583		1817	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1698	1583		1817	1583
Peak-hour factor, 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
Adj. Flow (vph)	44	900	712	660	964	41	498	42	407	43	42	36
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	293	0	0	34
Lane Group Flow (vph)	44	900	712	660	964	19	269	271	114	0	85	2
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	4.2	32.2	110.0	22.8	50.3	50.3	19.6	19.6	19.6		6.4	6.4
Effective Green, g (s)	4.2	32.2	110.0	22.8	50.3	50.3	19.6	19.6	19.6		6.4	6.4
Actuated g/C Ratio	0.04	0.29	1.00	0.21	0.46	0.46	0.18	0.18	0.18		0.06	0.06
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	67	1035	1583	711	1618	723	299	302	282		105	92
v/s Ratio Prot	0.02	c0.25		c0.19	0.27		c0.16	0.16			0.05	
v/s Ratio Perm			c0.45			0.01			0.07			0.00
v/c Ratio	0.66	0.87	0.45	0.93	0.60	0.03	0.90	0.90	0.41		0.81	0.02
Uniform Delay, d1	52.2	36.9	0.0	42.8	22.3	16.4	44.2	44.2	40.0		51.2	48.9
Progression Factor	1.00	1.00	1.00	0.88	1.02	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	20.8	9.9	0.9	15.1	1.3	0.1	27.6	27.1	1.0		35.1	0.1
Delay (s)	73.0	46.8	0.9	52.7	24.0	16.4	71.8	71.3	41.0		86.3	49.0
Level of Service	E	D	A	D	C	B	E	E	D		F	D
Approach Delay (s)		27.8			35.2			58.4			75.2	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	932	445	43	1389	351	301
v/c Ratio	0.51	0.42	0.38	0.63	0.81	0.58
Control Delay	21.4	10.7	49.4	9.9	53.1	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	10.7	49.4	9.9	53.1	18.2
Queue Length 50th (ft)	331	180	28	163	233	73
Queue Length 95th (ft)	414	m214	m55	326	304	141
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1810	1055	116	2201	555	617
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.42	0.37	0.63	0.63	0.49

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	1	819	392	38	1222	309	265
Future Volume (vph)	1	819	392	38	1222	309	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3539	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3377	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1	931	445	43	1389	351	301
RTOR Reduction (vph)	0	0	220	0	0	0	133
Lane Group Flow (vph)	0	932	225	43	1389	351	168
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		55.7	55.7	4.7	68.4	27.1	27.1
Effective Green, g (s)		55.7	55.7	4.7	68.4	27.1	27.1
Actuated g/C Ratio		0.51	0.51	0.04	0.62	0.25	0.25
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1709	801	75	2200	436	389
v/s Ratio Prot				0.02	c0.39	c0.20	
v/s Ratio Perm		0.28	0.14				0.11
v/c Ratio		0.55	0.28	0.57	0.63	0.81	0.43
Uniform Delay, d1		18.5	15.6	51.7	13.0	39.0	35.0
Progression Factor		1.08	5.00	0.84	0.61	1.00	1.00
Incremental Delay, d2		0.7	0.5	8.6	1.2	10.4	0.8
Delay (s)		20.8	78.6	51.8	9.1	49.3	35.7
Level of Service		C	E	D	A	D	D
Approach Delay (s)		39.5			10.4	43.1	
Approach LOS		D			B	D	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	906	252	202	810	523	99
v/c Ratio	0.78	0.35	0.85	0.41	0.93	0.17
Control Delay	44.1	12.5	76.5	15.4	60.1	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	12.5	76.5	15.4	60.1	5.9
Queue Length 50th (ft)	335	94	141	173	346	0
Queue Length 95th (ft)	427	142	#267	219	#540	37
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1162	712	246	1959	595	598
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.35	0.82	0.41	0.88	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	5	838	234	188	753	486	92
Future Volume (vph)	5	838	234	188	753	486	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3363	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	901	252	202	810	523	99
RTOR Reduction (vph)	0	0	165	0	0	0	67
Lane Group Flow (vph)	0	906	87	202	810	523	32
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		38.0	38.0	14.9	60.9	35.1	35.1
Effective Green, g (s)		38.0	38.0	14.9	60.9	35.1	35.1
Actuated g/C Ratio		0.35	0.35	0.14	0.55	0.32	0.32
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1161	546	239	1959	564	505
v/s Ratio Prot				c0.11	0.23	c0.30	
v/s Ratio Perm		c0.27	0.05				0.02
v/c Ratio		0.78	0.16	0.85	0.41	0.93	0.06
Uniform Delay, d1		32.3	24.9	46.4	14.2	36.2	26.0
Progression Factor		1.19	3.23	1.00	1.00	1.00	1.00
Incremental Delay, d2		4.6	0.5	23.0	0.6	21.4	0.1
Delay (s)		42.9	81.1	69.4	14.9	57.7	26.1
Level of Service		D	F	E	B	E	C
Approach Delay (s)		51.2			25.7	52.6	
Approach LOS		D			C	D	

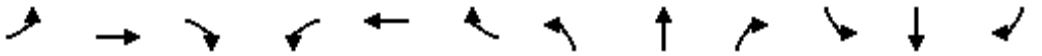
Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	199	741	79	606	973	51	50	319	113	115	124
v/c Ratio	0.97	0.96	0.10	0.95	0.96	0.06	0.32	0.81	0.63	0.64	0.74
Control Delay	118.7	62.2	0.3	80.2	50.1	0.1	62.7	27.3	74.8	74.8	84.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	118.7	62.2	0.3	80.2	50.1	0.1	62.7	27.3	74.8	74.8	84.0
Queue Length 50th (ft)	90	613	0	270	770	0	42	33	98	100	104
Queue Length 95th (ft)	#178	#932	0	#409	#1165	0	80	116	173	176	#194
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	205	775	766	636	1016	923	349	532	200	203	189
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.96	0.10	0.95	0.96	0.06	0.14	0.60	0.56	0.57	0.66

Intersection Summary

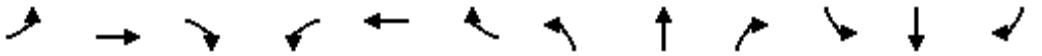
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	637	68	521	837	44	30	13	274	173	23	107
Future Volume (vph)	171	637	68	521	837	44	30	13	274	173	23	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1800	1583	1681	1704	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1800	1583	1681	1704	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	199	741	79	606	973	51	35	15	319	201	27	124
RTOR Reduction (vph)	0	0	46	0	0	23	0	0	256	0	0	0
Lane Group Flow (vph)	199	741	33	606	973	28	0	50	63	113	115	124
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	8.0	55.9	55.9	24.9	73.3	73.3		11.6	11.6	14.3	14.3	14.3
Effective Green, g (s)	8.0	55.9	55.9	24.9	73.3	73.3		11.6	11.6	14.3	14.3	14.3
Actuated g/C Ratio	0.06	0.42	0.42	0.19	0.55	0.55		0.09	0.09	0.11	0.11	0.11
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	204	776	659	636	1017	864		155	136	179	181	168
v/s Ratio Prot	0.06	0.40		c0.18	c0.52			0.03		0.07	0.07	
v/s Ratio Perm			0.02			0.02			c0.04			c0.08
v/c Ratio	0.98	0.95	0.05	0.95	0.96	0.03		0.32	0.46	0.63	0.64	0.74
Uniform Delay, d1	63.0	37.9	23.3	54.1	28.9	14.1		57.6	58.3	57.4	57.5	58.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	55.5	21.8	0.0	24.4	18.5	0.0		1.2	2.5	7.1	7.1	15.5
Delay (s)	118.5	59.7	23.4	78.5	47.4	14.1		58.8	60.8	64.5	64.6	73.7
Level of Service	F	E	C	E	D	B		E	E	E	E	E
Approach Delay (s)		68.4			57.9			60.6			67.7	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	62.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	134.2	Sum of lost time (s)	27.5
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	637	16	29	580	324	7	0	24	138	2	140
Future Volume (Veh/h)	188	637	16	29	580	324	7	0	24	138	2	140
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	221	749	19	34	682	381	8	0	28	162	2	165
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1063			768			2034	2332	758	1969	1960	682
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1063			768			2034	2332	758	1969	1960	682
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	66			96			57	100	93	0	95	63
cM capacity (veh/h)	655			846			18	23	407	31	40	450

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	221	768	34	682	381	36	329
Volume Left	221	0	34	0	0	8	162
Volume Right	0	19	0	0	381	28	165
cSH	655	1700	846	1700	1700	72	59
Volume to Capacity	0.34	0.45	0.04	0.40	0.22	0.50	5.55
Queue Length 95th (ft)	37	0	3	0	0	52	Err
Control Delay (s)	13.3	0.0	9.4	0.0	0.0	97.6	Err
Lane LOS	B		A			F	F
Approach Delay (s)	3.0		0.3			97.6	Err
Approach LOS						F	F

Intersection Summary				
Average Delay	1344.9			
Intersection Capacity Utilization	65.4%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	198	365	440	401	326	331	369	343	185	242	395	240
Average Queue (ft)	35	208	264	201	191	202	179	186	34	138	163	111
95th Queue (ft)	123	327	391	354	305	322	314	302	130	218	306	208
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)							0				0	
Queuing Penalty (veh)							0				0	
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)		5	0	0	0	1	0	8	0	0	1	
Queuing Penalty (veh)		2	2	0	1	3	0	3	0	1	3	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	145	79
Average Queue (ft)	60	16
95th Queue (ft)	118	50
Link Distance (ft)	192	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)	4	0
Queuing Penalty (veh)	1	0

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	297	334	169	164	376	306	174	499
Average Queue (ft)	128	154	59	40	153	115	153	184
95th Queue (ft)	273	300	124	106	282	230	199	407
Link Distance (ft)	650	650			701	701		625
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)				0	5		18	0
Queuing Penalty (veh)				0	2		49	1

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	364	368	176	271	272	208	509	280
Average Queue (ft)	214	229	70	143	151	90	294	40
95th Queue (ft)	349	353	141	239	245	186	464	150
Link Distance (ft)	701	701	701		860	860		495
Upstream Blk Time (%)							2	0
Queuing Penalty (veh)							0	0
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)							2	0
Queuing Penalty (veh)							2	1

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	L	T	R	LT	R	L	LT
Maximum Queue (ft)	163	425	954	250	274	632	890	225	99	168	146	207
Average Queue (ft)	72	177	449	87	185	238	425	41	32	74	62	102
95th Queue (ft)	137	413	895	260	286	447	768	164	74	132	125	181
Link Distance (ft)			2587			1225	1225		2008			194
Upstream Blk Time (%)							0					2
Queuing Penalty (veh)							0					0
Storage Bay Dist (ft)	400	400		225	250			200		700	135	
Storage Blk Time (%)		0	29	0	1	6	26	0			0	4
Queuing Penalty (veh)		0	70	0	4	17	11	0			1	9

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	SB
Directions Served	R
Maximum Queue (ft)	159
Average Queue (ft)	88
95th Queue (ft)	163
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	135
Storage Blk Time (%)	4
Queuing Penalty (veh)	9

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	LT	R
Maximum Queue (ft)	175	87	44	3	61	66	1497	240
Average Queue (ft)	63	5	10	0	12	19	1081	169
95th Queue (ft)	126	78	32	2	41	48	1901	340
Link Distance (ft)		1287		1476		644	1477	
Upstream Blk Time (%)							43	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)	200		200		200			215
Storage Blk Time (%)	0	0					86	0
Queuing Penalty (veh)	3	0					121	1

Network Summary

Network wide Queuing Penalty: 319

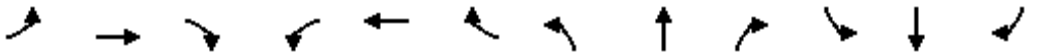
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	19	946	444	505	834	44	279	282	714	87	21
v/c Ratio	0.22	1.01	0.28	1.08	0.56	0.06	0.59	0.59	1.12	0.89	0.06
Control Delay	56.6	73.7	0.4	112.6	16.9	0.1	40.1	39.9	99.6	117.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.6	73.7	0.4	112.6	16.9	0.1	40.1	39.9	99.6	117.0	0.3
Queue Length 50th (ft)	13	~361	0	~196	121	0	178	180	~442	62	0
Queue Length 95th (ft)	38	#500	0	#305	274	m0	272	275	#674	#160	0
Internal Link Dist (ft)		1392			654			1277		188	
Turn Bay Length (ft)	225		425	350		175	225				100
Base Capacity (vph)	86	933	1583	468	1493	785	473	479	635	98	344
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	1.01	0.28	1.08	0.56	0.06	0.59	0.59	1.12	0.89	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	918	431	490	809	43	493	51	693	49	35	20
Future Volume (vph)	18	918	431	490	809	43	493	51	693	49	35	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.5	6.0	4.0	8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1701	1583		1810	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1701	1583		1810	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	946	444	505	834	44	508	53	714	51	36	21
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	189	0	0	20
Lane Group Flow (vph)	19	946	444	505	834	17	279	282	525	0	87	1
Turn Type	Prot	NA	Free	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			Free			6			4			3
Actuated Green, G (s)	2.2	29.0	110.0	15.0	41.3	41.3	31.0	31.0	31.0		6.0	6.0
Effective Green, g (s)	2.2	29.0	110.0	15.0	41.3	41.3	31.0	31.0	31.0		6.0	6.0
Actuated g/C Ratio	0.02	0.26	1.00	0.14	0.38	0.38	0.28	0.28	0.28		0.05	0.05
Clearance Time (s)	8.5	6.0		8.0	6.0	6.0	8.0	8.0	8.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	35	933	1583	468	1328	594	473	479	446		98	86
v/s Ratio Prot	0.01	c0.27		c0.15	0.24		0.17	0.17			c0.05	
v/s Ratio Perm			0.28			0.01			c0.33			0.00
v/c Ratio	0.54	1.01	0.28	1.08	0.63	0.03	0.59	0.59	1.18		0.89	0.01
Uniform Delay, d1	53.4	40.5	0.0	47.5	28.1	21.7	34.0	34.0	39.5		51.7	49.2
Progression Factor	1.00	1.00	1.00	1.17	0.61	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	16.1	33.0	0.4	60.9	1.9	0.1	1.9	1.9	101.0		55.8	0.1
Delay (s)	69.5	73.5	0.4	116.5	19.0	21.8	35.9	35.9	140.5		107.4	49.3
Level of Service	E	E	A	F	B	C	D	D	F		F	D
Approach Delay (s)		50.4			54.7			94.5			96.1	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	66.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	29.5
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1374	429	69	1085	373	491
v/c Ratio	0.86	0.44	0.78	0.51	0.78	0.96
Control Delay	15.6	0.9	86.5	18.9	49.8	62.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	0.9	86.5	18.9	49.8	62.3
Queue Length 50th (ft)	218	3	47	316	241	272
Queue Length 95th (ft)	m209	m1	m#100	m353	#365	#483
Internal Link Dist (ft)	654			692	612	
Turn Bay Length (ft)		450	175		150	
Base Capacity (vph)	1601	978	88	2119	491	522
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.44	0.78	0.51	0.76	0.94

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	5	1287	403	65	1020	351	462
Future Volume (vph)	5	1287	403	65	1020	351	462
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3539	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3366	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	5	1369	429	69	1085	373	491
RTOR Reduction (vph)	0	0	225	0	0	0	84
Lane Group Flow (vph)	0	1374	204	69	1085	373	407
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		52.3	52.3	5.5	65.8	29.7	29.7
Effective Green, g (s)		52.3	52.3	5.5	65.8	29.7	29.7
Actuated g/C Ratio		0.48	0.48	0.05	0.60	0.27	0.27
Clearance Time (s)		6.0	6.0	8.0	6.0	8.5	8.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1600	752	88	2116	477	427
v/s Ratio Prot				0.04	c0.31	0.21	
v/s Ratio Perm		c0.41	0.13				c0.26
v/c Ratio		0.86	0.27	0.78	0.51	0.78	0.95
Uniform Delay, d1		25.6	17.4	51.7	12.8	37.2	39.5
Progression Factor		0.56	0.45	0.78	1.39	1.00	1.00
Incremental Delay, d2		0.6	0.1	30.7	0.7	8.1	31.6
Delay (s)		15.0	8.0	71.0	18.5	45.3	71.1
Level of Service		B	A	E	B	D	E
Approach Delay (s)		13.3			21.6	59.9	
Approach LOS		B			C	E	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1410	475	281	767	388	117
v/c Ratio	0.95	0.51	1.09	0.33	1.05	0.28
Control Delay	38.4	8.0	128.0	8.4	102.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	8.0	128.0	8.4	102.5	8.4
Queue Length 50th (ft)	334	59	~224	111	~299	0
Queue Length 95th (ft)	m#621	m78	#392	142	#488	47
Internal Link Dist (ft)	692			817	473	
Turn Bay Length (ft)			350		525	
Base Capacity (vph)	1493	935	257	2348	371	424
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.51	1.09	0.33	1.05	0.28

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	10	1301	442	261	713	361	109
Future Volume (vph)	10	1301	442	261	713	361	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)		3538	1583	1770	3539	1770	1583
Flt Permitted		0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)		3351	1583	1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	1399	475	281	767	388	117
RTOR Reduction (vph)	0	0	231	0	0	0	93
Lane Group Flow (vph)	0	1410	244	281	767	388	24
Turn Type	Perm	NA	Perm	Prot	NA	Prot	Perm
Protected Phases		2		1	6	4	
Permitted Phases	2		2				4
Actuated Green, G (s)		49.0	49.0	16.0	73.0	23.0	23.0
Effective Green, g (s)		49.0	49.0	16.0	73.0	23.0	23.0
Actuated g/C Ratio		0.45	0.45	0.15	0.66	0.21	0.21
Clearance Time (s)		6.0	6.0	8.0	6.0	8.0	8.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1492	705	257	2348	370	330
v/s Ratio Prot				c0.16	0.22	c0.22	
v/s Ratio Perm		c0.42	0.15				0.02
v/c Ratio		0.95	0.35	1.09	0.33	1.05	0.07
Uniform Delay, d1		29.2	20.0	47.0	7.9	43.5	34.9
Progression Factor		1.04	2.12	1.00	1.00	1.00	1.00
Incremental Delay, d2		7.5	0.6	83.4	0.4	60.1	0.1
Delay (s)		37.8	43.0	130.4	8.3	103.6	35.0
Level of Service		D	D	F	A	F	D
Approach Delay (s)		39.1			41.0	87.7	
Approach LOS		D			D	F	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		

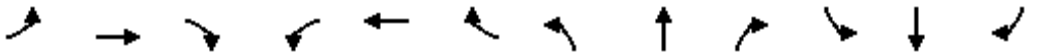
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	160	708	38	522	543	41	65	618	92	95	102
v/c Ratio	0.62	1.03	0.05	1.09	0.67	0.05	0.17	1.15	0.60	0.61	0.70
Control Delay	77.4	87.5	0.1	126.9	38.7	0.1	49.6	116.8	80.5	81.0	90.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.4	87.5	0.1	126.9	38.7	0.1	49.6	116.8	80.5	81.0	90.2
Queue Length 50th (ft)	78	~739	0	~296	423	0	52	~499	91	93	97
Queue Length 95th (ft)	119	#997	0	#418	569	0	98	#747	156	162	164
Internal Link Dist (ft)		2559			1277		1985			173	
Turn Bay Length (ft)	400		225	250		200		700	135		135
Base Capacity (vph)	279	687	701	477	812	764	382	538	182	184	171
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	1.03	0.05	1.09	0.67	0.05	0.17	1.15	0.51	0.52	0.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

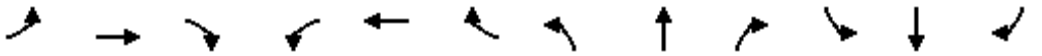
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	673	36	496	516	39	49	12	587	157	21	97
Future Volume (vph)	152	673	36	496	516	39	49	12	587	157	21	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3433	1863	1583	3433	1863	1583		1791	1583	1681	1704	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3433	1863	1583	3433	1863	1583		1791	1583	1681	1704	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	160	708	38	522	543	41	52	13	618	165	22	102
RTOR Reduction (vph)	0	0	24	0	0	23	0	0	201	0	0	0
Lane Group Flow (vph)	160	708	14	522	543	18	0	65	417	92	95	102
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6			2			4			3
Actuated Green, G (s)	11.1	54.5	54.5	20.5	64.4	64.4		31.5	31.5	13.6	13.6	13.6
Effective Green, g (s)	11.1	54.5	54.5	20.5	64.4	64.4		31.5	31.5	13.6	13.6	13.6
Actuated g/C Ratio	0.08	0.37	0.37	0.14	0.44	0.44		0.21	0.21	0.09	0.09	0.09
Clearance Time (s)	7.0	6.0	6.0	7.5	6.0	6.0		7.5	7.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	258	687	584	476	812	690		382	337	154	157	145
v/s Ratio Prot	0.05	c0.38		c0.15	0.29			0.04		0.05	0.06	
v/s Ratio Perm			0.01			0.01			c0.26			c0.06
v/c Ratio	0.62	1.03	0.02	1.10	0.67	0.03		0.17	1.24	0.60	0.61	0.70
Uniform Delay, d1	66.2	46.5	29.6	63.5	33.1	23.7		47.4	58.0	64.4	64.4	65.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.6	42.4	0.0	70.1	2.1	0.0		0.2	130.2	6.1	6.4	14.4
Delay (s)	70.8	89.0	29.6	133.7	35.2	23.7		47.6	188.3	70.5	70.9	79.4
Level of Service	E	F	C	F	D	C		D	F	E	E	E
Approach Delay (s)		83.3			81.2			174.9			73.8	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	102.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	147.6	Sum of lost time (s)	27.5
Intersection Capacity Utilization	93.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	588	6	14	467	430	3	1	22	295	7	184
Future Volume (Veh/h)	145	588	6	14	467	430	3	1	22	295	7	184
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	158	639	7	15	508	467	3	1	24	321	8	200
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												9
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	975			646			1600	1964	642	1518	1500	508
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	975			646			1600	1964	642	1518	1500	508
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	78			98			93	98	95	0	91	65
cM capacity (veh/h)	707			939			42	48	474	75	93	565

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	158	646	15	508	467	28	529
Volume Left	158	0	15	0	0	3	321
Volume Right	0	7	0	0	467	24	200
cSH	707	1700	939	1700	1700	197	112
Volume to Capacity	0.22	0.38	0.02	0.30	0.27	0.14	4.72
Queue Length 95th (ft)	21	0	1	0	0	12	Err
Control Delay (s)	11.5	0.0	8.9	0.0	0.0	26.3	Err
Lane LOS	B		A			D	F
Approach Delay (s)	2.3		0.1			26.3	Err
Approach LOS						D	F

Intersection Summary				
Average Delay	2251.0			
Intersection Capacity Utilization	68.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	T	R	L	LT	R
Maximum Queue (ft)	226	1097	1166	450	362	375	662	664	107	231	376	893
Average Queue (ft)	37	535	623	291	309	320	349	249	15	123	151	523
95th Queue (ft)	164	1104	1218	597	429	444	766	606	62	195	288	907
Link Distance (ft)		1396	1396				650	650			1225	1225
Upstream Blk Time (%)		1	4				8	0				0
Queuing Penalty (veh)		0	0				56	1				1
Storage Bay Dist (ft)	225			425	350	350			175	225		
Storage Blk Time (%)		46	26	0	14	33	1	2	0	0	0	
Queuing Penalty (veh)		8	111	1	55	134	4	1	0	0	1	

Intersection: 1: Centerville Road/Retail Entrance & US Route 60

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	180	79
Average Queue (ft)	80	15
95th Queue (ft)	168	65
Link Distance (ft)	192	
Upstream Blk Time (%)	4	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)	15	0
Queuing Penalty (veh)	3	0

Intersection: 2: Rt 199 SB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	407	444	226	189	320	284	175	653
Average Queue (ft)	221	247	73	74	185	171	167	435
95th Queue (ft)	348	378	152	157	296	266	198	754
Link Distance (ft)	650	650			701	701		625
Upstream Blk Time (%)								23
Queuing Penalty (veh)								0
Storage Bay Dist (ft)			450	175			150	
Storage Blk Time (%)		0	0	0	8		38	15
Queuing Penalty (veh)		1	0	0	5		176	53

Intersection: 3: Rt 199 NB Ramps & US Route 60

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	L	T	T	L	R
Maximum Queue (ft)	521	528	293	368	579	454	496	280
Average Queue (ft)	286	301	106	262	223	150	299	81
95th Queue (ft)	456	469	209	409	611	514	486	287
Link Distance (ft)	701	701	701		860	860		495
Upstream Blk Time (%)					2	0	6	2
Queuing Penalty (veh)					0	0	0	0
Storage Bay Dist (ft)				350			525	
Storage Blk Time (%)				14	0		6	2
Queuing Penalty (veh)				50	0		7	6

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	L	T	R	LT	R	L	LT
Maximum Queue (ft)	125	425	1937	250	275	793	640	225	1234	724	155	211
Average Queue (ft)	53	261	1189	56	251	473	298	41	490	550	64	109
95th Queue (ft)	106	547	2244	213	319	867	577	163	1482	861	131	189
Link Distance (ft)			2587			1225	1225		2008			194
Upstream Blk Time (%)			3				0		0			2
Queuing Penalty (veh)			0				0		0			0
Storage Bay Dist (ft)	400	400		225	250			200		700	135	
Storage Blk Time (%)		0	56	0	13	43	18	0	1	30	1	7
Queuing Penalty (veh)		0	104	0	32	106	7	0	4	18	1	12

Intersection: 4: Oppurtunity Way/Retail Entrance & Centerville Road

Movement	SB
Directions Served	R
Maximum Queue (ft)	159
Average Queue (ft)	89
95th Queue (ft)	163
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	135
Storage Blk Time (%)	3
Queuing Penalty (veh)	6

Intersection: 5: Longhill Gate Road/Warhill Trail & Longhill Road

Movement	EB	WB	WB	NB	SB	SB
Directions Served	L	L	R	LTR	LT	R
Maximum Queue (ft)	132	24	54	47	1523	240
Average Queue (ft)	52	5	12	16	1469	199
95th Queue (ft)	99	21	39	39	1652	345
Link Distance (ft)				644	1477	
Upstream Blk Time (%)					92	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	200	200	200			215
Storage Blk Time (%)	0				98	0
Queuing Penalty (veh)	0				181	1

Network Summary

Network wide Queuing Penalty: 1149

NOTE: Condition Nos. 1, 2, 3, 7, 8, and 9 are existing conditions which have been modified to reflect the current application. Condition Nos. 4, 5, 6, 10, 11, and 12 are new conditions. Condition No. 13 is an existing condition with no changes.

1. *Master Plan:* This Special Use Permit (the "SUP") shall be valid for the Warhill Sports Complex Community Recreation facility (the "Project"). The Project is located at 5700 and 5720 Warhill Road, and is further identified as JCC Real Estate Tax Map Nos. 3210100012 and 3210100012A, respectively (the "Properties"). Development of the Properties shall be completed in accordance with the "2016 Warhill Sports Complex Master Plan," dated 9/19/2016 (the "Master Plan"), with any deviations considered per Section 24-23(a)(2) of the Zoning Ordinance.

2. *Archaeology:* A Phase I Archaeological Study for the Properties shall be submitted to the Director of Planning for review and approval prior to land disturbance for the Project. A treatment plan shall be submitted and approved by the Director of Planning for all sites in the Phase I study that are recommended for a Phase II evaluation and/or identified as eligible for inclusion on the National Register of Historic Places. If a Phase II study is undertaken, such a study shall be approved by the Director of Planning and a treatment plan for said sites shall be submitted to, and approved by, the Director of Planning for sites that are determined to be eligible for inclusion on the National Register of Historic Places and/or those sites that require a Phase III study. If in the Phase III study, a site is determined eligible for nomination to the National Register of Historic Places and said site is to be preserved in place, the treatment plan shall include nomination of the site to the National Register of Historic Places. If a Phase III study is undertaken for said sites, such studies shall be approved by the Director of Planning prior to land disturbance within the study areas. All Phase I, Phase II, and Phase III studies shall meet the Virginia Department of Historic Resources' Guidelines for Preparing Archaeological Resource Management Reports and the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation, as applicable, and shall be conducted under the supervision of a qualified archaeologist who meets the qualifications set forth in the Secretary of the Interior's Professional Qualification Standards. All approved treatment plans shall be incorporated into the plan of development for the Properties and the clearing, grading or construction activities thereon. This condition shall be interpreted in accordance with the County's Archaeological Policy adopted by the County on September 22, 1998.

3. *Buffer:* A minimum 150-foot buffer shall be maintained along the exterior boundary lines of JCC Real Estate Tax Map No. 3210100012. This buffer shall remain undisturbed with the exception of breaks for roadways and pedestrian connections, utilities, walking and hiking trails, and other uses specifically approved by the Development Review Committee.

4. *Road Improvements:* The southbound right turn lane on Warhill Trail shall be lengthened to 125 feet prior to June 30, 2022, unless an alternative time frame is approved by the Director of Planning.

5. Signage. Measures to prevent blocking of intersections during times of queuing on Warhill Trail Road, such as signage and/or paint markings on the pavement at the Warhill Trail intersection with Blue Bill Run and Beaver Run Roads, shall be installed within one (1) year of the issuance of this SUP.

6. *Traffic Management Plan ("TMP"):* Beginning on January 31, 2017, and every January 31st of each year thereafter, a TMP addressing the circulation and queuing of vehicles within the Project area shall be submitted to the Virginia Department of Transportation (VDOT) and to the Director of Planning or his designee for his review and approval. The TMP shall consist of measures such as, but not limited to, parking lot usage, signage, pavement markings or other vehicle control/directional devices, and manual traffic control (police officer or similar) at the intersection of Warhill Trail and Longhill Road. The TPM shall be submitted until such time as physical improvements to the intersection of Longhill Road/Warhill Trail, or other improvements, result in operation of the Longhill Road/Warhill Trail intersection at a Level of Service "D" or better, as approved by VDOT and the Director of Planning.

7. *Traffic Impact Study.* A traffic impact study shall be submitted to the County within five (5) years of the issuance of this SUP amendment, or at such time as the traffic study is required by VDOT. The Director of Planning shall have the authority to delay requiring the traffic study to be submitted beyond the 5-year time period if construction of the athletic fields labeled "B", "E", and "F" on the revised Master Plan have not been completed within 5 years of issuance of this SUP amendment.

8. *Outdoor Speakers:* All outdoor speakers used on the Properties shall be oriented generally towards the interior of the Properties and away from exterior property lines.

9. *Lighting:* A lighting plan shall be reviewed and approved by the Director of Planning for any lighting proposed adjacent to any athletic fields. This plan shall indicate that no glare, as determined by the Director of Planning or his designee, is cast onto adjacent properties. "Glare" shall be defined as more than 0.1 foot-candle at the boundary of the Properties or any direct view of the lighting source from the adjoining properties. All other lighting shall comply with Zoning Ordinance, article II, Special Regulations, Division 7, Outdoor Lighting.

10. *Water Conservation Plan:* Prior to final development plan approval, water conservation standards shall be submitted to and approved by the James City Service Authority. The standards shall include, but not be limited to such water conservation measures as limitations on the installation and use of irrigation systems and irrigation wells, the use of approved landscaping materials including the use of drought resistant native and other adopted low water use landscaping materials and warm season turf where appropriate, and the use of water conserving fixtures and appliances to promote water conservation and minimize the use of public water resources.

11. *Bus Transfer Station Access:* Access to the proposed bus transfer station by all fixed-route busses shall be limited to the intersection of Opportunity Way and Centerville Road. The intent of this condition is to ensure regular bus routes do not enter the property through the Warhill Trail/Longhill Road intersection entrance.

12. *Pedestrian Accommodation:* Prior to final inspections for the bus transfer station, a crosswalk shall be provided connecting the proposed bus transfer station to the existing pedestrian accommodation along Stadium Road.

13. *Severability:* This SUP is not severable. Invalidation of any word, phrase, clause, sentence, or paragraph shall invalidate the remainder.

R E S O L U T I O N

VIRGINIA CODE § 15.2-2232 ACTION ON CASE NO. SUP-0014-2016/MP-0002-2016

WARHILL SPORTS COMPLEX AMENDMENT

WHEREAS, in accordance with Section 15.2-2232 of the Code of Virginia, a park or other public area, public building or public structure, whether publicly or privately owned, shall not be constructed, established or authorized, unless and until the general location or approximate location, character and extent thereof has been submitted to and approved by the Planning Commission as being substantially in accord with the adopted Comprehensive Plan or part thereof; and

WHEREAS, James City County, Virginia (the "Owner"), owns properties located at 5700 and 5720 Warhill Trail, further identified as James City County Real Estate Tax Map Parcel Nos. 3210100012 and 3210100012A, respectively (the "Properties"), which are zoned PL, Public Lands; and

WHEREAS, Mr. John Carnifax of the James City County Parks & Recreation Department, on behalf of the Owner, has applied for a Special Use Permit amendment and Master Plan amendment to allow for the addition of a Running Center building, a Williamsburg Area Transit Authority bus transfer station, the relocation of a proposed community gym and other minor revisions on the Properties as shown on a plan titled "2016 Warhill Sports Complex Master Plan" dated September 19, 2016; and

WHEREAS, in accordance with § 15.2-2204 of the Code of Virginia and Sections 24-9 of the James City County Zoning Ordinance, a public hearing was advertised, adjacent property owners notified and a hearing scheduled for Case No. SUP-0014-2016/MP-0002-2016.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of James City County, Virginia, finds that the general or approximate location, character and extent of the park or other public areas, public buildings or public structures shown in Case No. SUP-0014-2016/MP-0002-2016 are substantially in accord with the adopted Comprehensive Plan and applicable parts thereof.

_____
Tim O'Connor
Chair, Planning Commission

ATTEST:

_____
Paul D. Holt, III
Secretary

Adopted by the Planning Commission of James City County, Virginia, this 2nd day of November, 2016.

SUP14-16MP02-16Warhill-res

JCC-SUP-0014-2016/MP-0002-2016
Warhill Sports Complex (service road)

From: Kenneth Selby [mailto:khselby@aol.com]
Sent: Monday, September 26, 2016 11:14 AM
To: Planning <planning@jamescitycountyva.gov>
Subject: Warhill Sports Complex Master Plan Amendment letter dtd 9/20/16

Mr Holt,

After reading your proposal letter I have one question that concerns not only the Mallard Hill neighborhood but ALL users of complex using the Warhill Road entrance. What planning and coordination has been conducted with VDOT and the county's roads department as to the impact of putting the WATA transfer station on the Warhill Road side of the complex?

My concern is egress from Warhill to Longhill Road. First and foremost this is and has been a safety concern since we moved here almost six years ago. By adding the transfer station now we will have to add buses to the extremely long lines of traffic trying to exit Warhill. If you've never tried this exit I'd suggest you do so prior to, between or after sporting events. Lines can develop from Longhill to past the Warhill entrance gate.

There are a couple of solutions that would remedy this safety issue. The first is to install a traffic signal at the Warhill/Longhill intersection. While I understand this may be in the long range plan of VDOT it must surely be addressed if the Master Plan Amendment is approved. The other solution would be to establish the transfer point off of Opportunity Way or possibly at the stadium on the north end?

I appreciate your consideration in this matter.

V/r,

Ken Selby
5513 N Mallard Run
Williamsburg VA 23188
Cell (612) 227-6990

Jose Ribeiro

Subject: FW: Lawn bowling

-----Original Message-----
From: CHRISTINE BORN [mailto:christinepaque@icloud.com]
Sent: Monday, October 24, 2016 4:33 PM
To: Paul Holt <Paul.Holt@jamescitycountyva.gov>
Subject: Lawn bowling

Since the closure of the bowling green in Williamsburg we are searching for a new venue. I have played at your indoor sports complex. I understand there is a proposal for a specific outdoor green and would like to add my support for it. It is a great sport for everyone. There is a member who is unable to bend down to deliver a bowl who uses a special gadget with which the bowl can be released while standing. This is one example of how seniors with reduced mobility can benefit from the sport. It is an excellent sport for seniors and of course any adult (. In the U K young people can play as well.) Many members of our bowling club; some of whom have been playing for years would be able to assist in teaching the sport. It is also a sport for men and women as strength is not necessary as it is a question of applying certain skills.
Thai you for considering our proposal . Christine Born

Sent from my iPad

Jose Ribeiro

Subject: FW: WISC/Warhill Trail

From: Abigail Knox [abigailmknox@gmail.com]
Sent: Monday, October 24, 2016 4:19 PM
To: Richard Krapf
Cc: Michael Hipple; jeffrey.bigelow@cox.net
Subject: WISC/Warhill Trail

Gentlemen,

As 19 year residents of Mallard Hill we have witnessed the many changes to Warhill Park and WISC. We are not in anyway opposed to the improvements to the park and the benefits provided to the residents of James City County. We are, however, losing patience with the lack of traffic control on Warhill Trail and the additional noise and access issues it has created for our neighborhood. We often see traffic backups to the entrance to the park, making it difficult for us to leave our home. We can no longer enjoy a quiet dinner on our porch without excessive noise from buses, speeding vehicles and commercial traffic caused by the childcare and sports activities.

As residents who witness these issues daily we would like to propose that a solution to the traffic issues be addressed before the changes are approved. Opening of the road through to Opportunity Way would seem the most obvious solution, since a light exists at Centerville Road and traffic would have a safer and speedier exit from the park. During morning and evening rush hours exiting to Longhill Road is very dangerous and a number of accidents have occurred. Regular speed enforcement is also necessary. The majority of the traffic on Warhill Trail exceeds the 30 mph speed limit and rarely stops for pedestrians to access the bicycle and walking trails.

We appreciate your consideration of the quality of life and property values in the Mallard Hill neighborhood.

Roy A. and Abigail Knox
abigailmknox@gmail.com

5521 Swan Road
Williamsburg, VA 23188
757-258-0887

AGENDA ITEM NO. F.2.

ITEM SUMMARY

DATE: 11/2/2016

TO: The Planning Commission

FROM: Roberta Sulouff, Planner

SUBJECT: SUP-0015-2016. Lafayette High School Auxiliary Gym

ATTACHMENTS:

	Description	Type
🗋	Staff Report	Staff Report
🗋	Location Map	Backup Material
🗋	Proposed SUP Conditions	Backup Material
🗋	Resolution for Consistency with Section 15.2-2232	Resolution
🗋	Proposed Master Plan	Backup Material
🗋	Illustrative Building Elevations	Backup Material

REVIEWERS:

Department	Reviewer	Action	Date
Planning Commission	Holt, Paul	Approved	10/27/2016 - 9:18 AM
Planning Commission	Holt, Paul	Approved	10/27/2016 - 9:19 AM
Publication Management	Burcham, Nan	Approved	10/27/2016 - 9:27 AM
Planning Commission	Holt, Paul	Approved	10/27/2016 - 9:28 AM

SPECIAL USE PERMIT-0015-2016. Lafayette High School Auxiliary Gym

Staff Report for the November 2, 2016, Planning Commission Public Hearing

SUMMARY FACTS

Applicants:	Mr. Carroll E. Collins, Kimley Horn and Associates, Inc.
Land Owners:	Williamsburg-James City County Public Schools (WJCC)
Proposal:	To allow for the construction of a ±10,000 square foot auxiliary gymnasium and associated infrastructure. If approved, this Special Use Permit (SUP) will also bring the existing school use into conformance with the Zoning Ordinance.
Location:	4460 Longhill Road
Tax Map/Parcel No.:	3230100001
Project Acreage:	+/- 49.76 acres
Zoning:	PL, Public Lands
Comprehensive Plan:	Federal, State and County land
Primary Service Area:	Inside

PUBLIC HEARING DATES

Planning Commission:	November 2, 2016, 7:00 p.m.
Board of Supervisors:	December 13, 2016, 6:30 p.m. (tentative)
Staff Contact:	Roberta Sulouff, Planner

FACTORS FAVORABLE

1. With the proposed conditions, staff finds the proposal compatible with surrounding zoning and development and consistent with the adopted Comprehensive Plan.

2. The request would bring the existing school use into conformance with the Zoning Ordinance.

3. The project does not provide for any extra student capacity and is not projected to generate any new traffic impacts.

4. This project has funding under the current Capital Improvements Program.

FACTORS UNFAVORABLE

Staff finds no unfavorable factors.

SUMMARY STAFF RECOMMENDATION

Approval, subject to the proposed conditions.

PROJECT DESCRIPTION

The application, if approved, would permit the construction of a ±10,000 square foot auxiliary gymnasium and an associated fire lane and walkway. The proposed addition will mainly be used for physical education classes during the school day, as well as an on-site practice facility for school sports. If approved, this SUP will also bring the existing school use into conformance with the Zoning Ordinance.

This staff report is prepared by the James City County Planning Division to provide information to the Planning Commission and Board of Supervisors to assist them in making a recommendation on this application. It may be useful to members of the general public interested in this application.

PLANNING AND ZONING HISTORY

Lafayette High School did not require an SUP when it initially opened; however, the school site was rezoned to the Public Land District in 2007, where schools are a specially permitted use. Though the school is a legally nonconforming use, an SUP is required for any expansion. Approval of this SUP will also bring the existing school use into conformance with the zoning ordinance and permit the referenced improvements to the site.

SURROUNDING ZONING AND DEVELOPMENT

- The zoning of surrounding properties generally to the northeast and east are R-2, General Residential, while properties to the south are zoned R-8, Rural Residential, to the west are zoned R-4, Residential Planned Community, and to the Northwest are zoned PL, Public Lands.

- The property is generally bounded by the Season's Trace subdivision to the north and east, by Longhill Road to the south, by the Mallard Hills subdivision to the west and by the Warhill Sports Complex to the northwest.

COMPREHENSIVE PLAN

The property is designated Federal, State and County land on the adopted Comprehensive Plan Land Use Map. Land uses in this designation are publicly owned and include County offices and facilities and larger utility sites. Staff finds the proposed improvements consistent with the Comprehensive Plan as they are accessory to a recommended land use.

FINDING OF CONSISTENCY

Section 15.2-2232 of the Code of Virginia states, in part, that no public building or public structure be constructed or authorized unless the Planning Commission finds the location of the proposed facility "substantially" consistent with the adopted Comprehensive Plan. The Comprehensive Plan adopted in 2015, "Toward 2035, Leading the Way," designates the Lafayette site as Federal, State and County land. As previously stated, staff finds the proposed improvements consistent with the Comprehensive Plan as they are accessory to a recommended land use. For the Commission's consideration, a consistency determination resolution is included as Attachment No. 3.

PUBLIC IMPACTS

1. Anticipated Impact on Public Facilities and Services:

   a. *Traffic:* This project proposes no additional student capacity and will be used mainly for classes during school hours as well as an on-site practice facility for students attending the school. As such, staff finds that the proposal will not generate any additional peak hour trips to or from the school.

2. Nearby and Surrounding Properties: No impacts anticipated.

3. Environmental: There is a Resource Protection Area (RPA) located on this property, however the limits of this proposal fall outside of the RPA.

4. Cultural and Historical Resources: While this area is not identified as archeologically sensitive by the adopted Comprehensive Plan, a condition has been added to ensure that an archaeological study will be completed should any objects of

potential archeological significance be found during the development of the site.

PROPOSED SUP CONDITIONS

- Draft text is provided as Attachment No. 2.

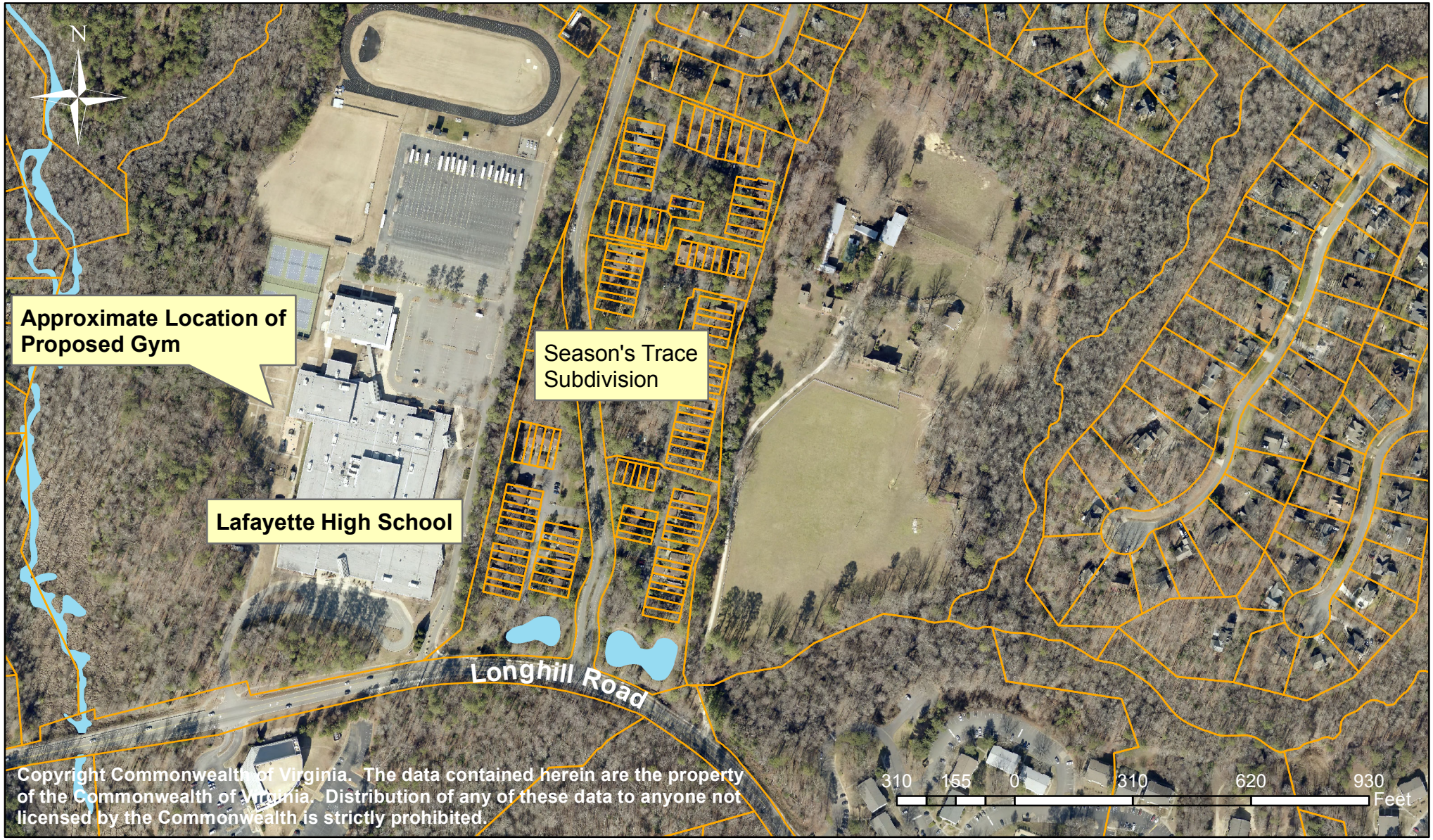
STAFF RECOMMENDATION

Staff finds the proposal to be compatible with surrounding development and consistent with the adopted Comprehensive Plan and Zoning Ordinance. Staff recommends the James City County Planning Commission recommend approval of this application to the Board of Supervisors, subject to the attached conditions.

RS/nb
SUP15-16LHSAuxGym

Attachments:
1. Location Map
2. Proposed SUP Conditions
3. Resolution for Consistency with Section 15.2-2232
4. Master Plan
5. Illustrative Building Elevations

JCC Case No. SUP-0015-2016
Lafayette High School
Auxiliary Gym



SUP-0015-2016, Lafayette Auxiliary Gym

Draft SUP Conditions

1. *Master Plan and Use.* This SUP shall be valid for the existing school use, construction of an approximately 10,000 square foot gymnasium, and other minor improvements to the site located at 4460 Longhill Road and further identified as James City County Real Estate Tax Map No. 3230100001 (the "Property"). Development of the Property shall occur generally as shown on the master plan prepared by Kimley-Horn and Associates, Inc., entitled "Lafayette High School for James City County, Master Plan" dated September 20, 2016, with any deviations considered per Section 24-23(a)(2) of the Zoning Ordinance.

2. *Water Conservation.* The Williamsburg-James City County School Board (the "Owner") shall be responsible for developing and enforcing water conservation standards to be submitted to and approved by the James City Service Authority prior to final site plan approval of the gymnasium. The standards shall include, but shall not be limited to, such water conservation measures as limitations on the installation and use of irrigation systems and irrigation wells, the use of approved landscaping materials including the use of drought resistant native and other adopted low water use landscaping materials and warm season turf where appropriate and the use of water conserving fixtures and appliances to promote water conservation and minimize the use of public water resources.

3. *Archaeological Study.* If an archeological site is discovered during land disturbing activities, a Phase I Archaeological Study for any disturbed area shall be submitted to the Director of Planning for his review and approval. All construction work involving subsurface disturbance will be halted in the area of the site and in the surrounding area where further subsurface remains can reasonably be expected to occur and the Owner shall immediately notify the County of the discovery. After completion of the Phase I Archeological Study, construction work may then continue in the project area outside the archeological site. A treatment plan shall be submitted and approved by the Director of Planning for all sites in the Phase I study that are recommended for a Phase II evaluation and/or identified as being eligible for inclusion on the National Register of Historic Places. If a Phase II study is undertaken, such a study shall be approved by the Director of Planning and a treatment plan for said sites shall be submitted to, and approved by, the Director of Planning for sites that are determined to be eligible for inclusion on the National Register of Historic Places and/or those sites that require a Phase III study. If in the Phase III study, a site is determined eligible for nomination to the National Register of Historic Places and said site is to be preserved in place, the treatment plan shall include nomination of the site to the National Register of Historic Places. If a Phase III study is undertaken for said sites, such studies shall be approved by the Director of Planning prior to resuming land disturbing activities within the study areas. All Phase I, Phase II, and Phase III studies shall meet the Virginia Department of Historic Resources' *Guidelines for Preparing Archaeological Resource Management Reports* and the Secretary of the Interior's *Standards and Guidelines for Archaeological Documentation*, as applicable, and shall be conducted under the supervision of a qualified archaeologist who meets the qualifications set forth in the Secretary of the Interior's *Professional Qualification Standards.* All approved treatment plans shall be incorporated into the plan of development for the site and the clearing, grading or construction activities thereon.

If the site is determined to meet the National Register Criteria (36 CFR Part 60), the Owner shall prepare a plan for its avoidance, protection, recovery of information, or destruction without data recovery. The plan shall be approved by the County prior to implementation. Work in the affected area shall not proceed until either, (a) the development and implementation of appropriate data recovery or other recommended mitigation procedures, or (b) the determination is made that the location remains are not eligible for inclusion on the National Register.

4. *Commencement of Construction.* If construction of the gymnasium has not commenced within 36 months from the issuance of an SUP, the SUP shall become void. Construction shall be defined as obtaining permits for building construction and footings and/or foundation has passed required inspections.

5. *Severance Clause.* This SUP is not severable. Invalidation of any word, phrase, clause, sentence or paragraph shall invalidate the remainder.

R E S O L U T I O N

CASE NO. SUP-0015-2016. LAFAYETTE HIGH SCHOOL AUXILIARY GYM

WHEREAS, in accordance with § 15.2-2232 of the Code of Virginia, a park or other public area, public building or public structure, whether publicly or privately owned, shall not be constructed, established or authorized, unless and until the general location or approximate location, character and extent thereof has been submitted to and approved by the Planning Commission as being substantially in accord with the adopted Comprehensive Plan or part thereof; and

WHEREAS, Williamsburg-James City County Public Schools (the "Owner"), owns property located at 4460 Longhill Road, further identified as James City County Real Estate Tax Map Parcel No. 3230100001 (the "Property"), which is zoned PL, Public Lands; and

WHEREAS, Mr. Caroll Collins of Kimley Horn and Associates, Inc., on behalf of the Owner, has applied for a Special Use Permit to allow for the currently non-conforming school use, addition of an auxiliary gym and other minor revisions on the Property as shown on a plan titled "Lafayette High School for James City County Master Plan," dated September 20, 2016; and

WHEREAS, in accordance with § 15.2-2204 of the Code of Virginia and Section 24-9 of the James City County Zoning Ordinance, a public hearing was advertised, adjacent property owners notified, and a hearing scheduled for Case No. SUP-0015-2016.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of James City County, Virginia, finds that the general or approximate location, character and extent of the gymnasium and other public areas, public buildings or public structures shown in Case No. SUP-0015-2016 are substantially in accord with the adopted Comprehensive Plan and applicable parts thereof.

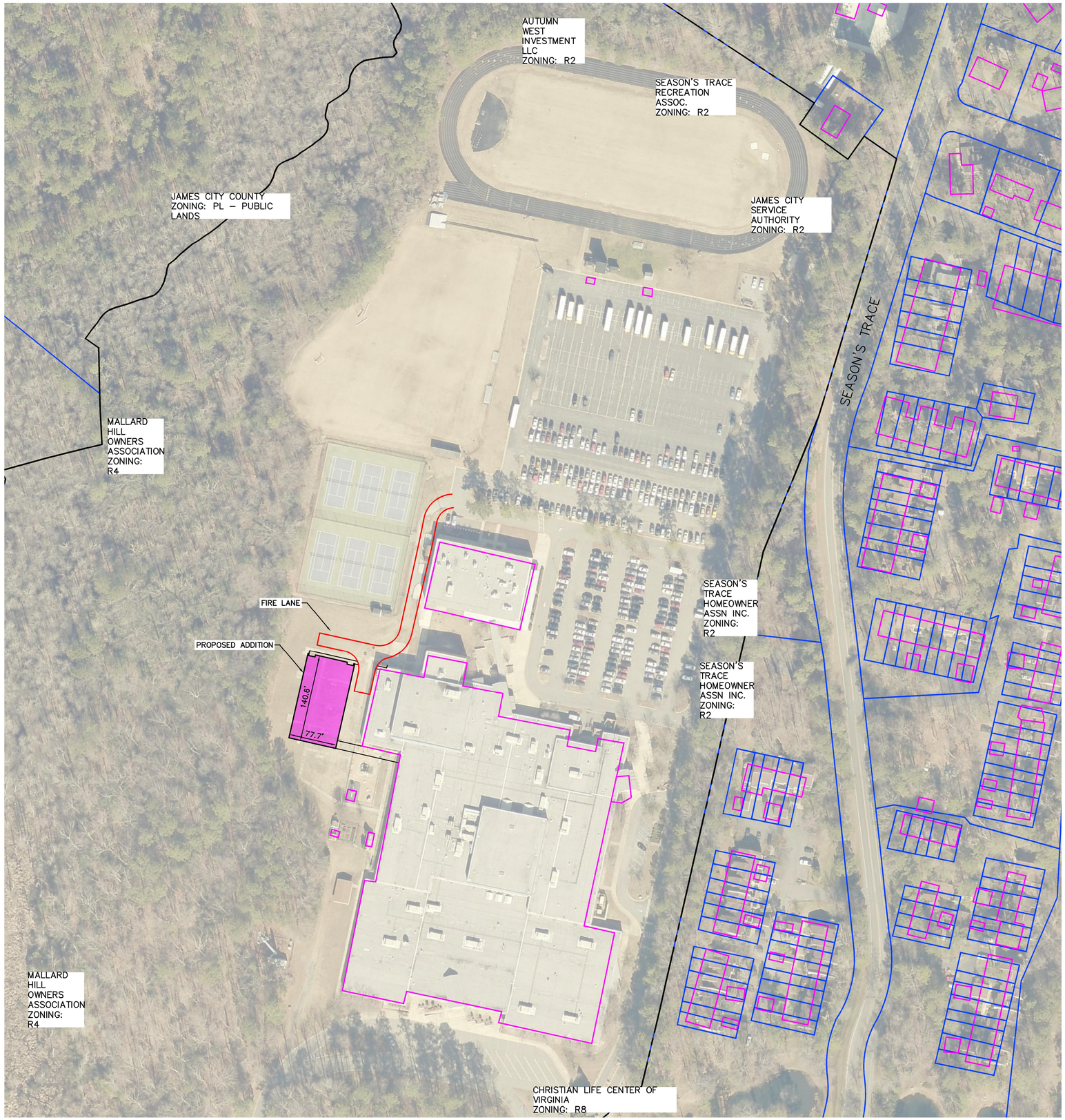
_____
Tim O'Connor
Chair, Planning Commission

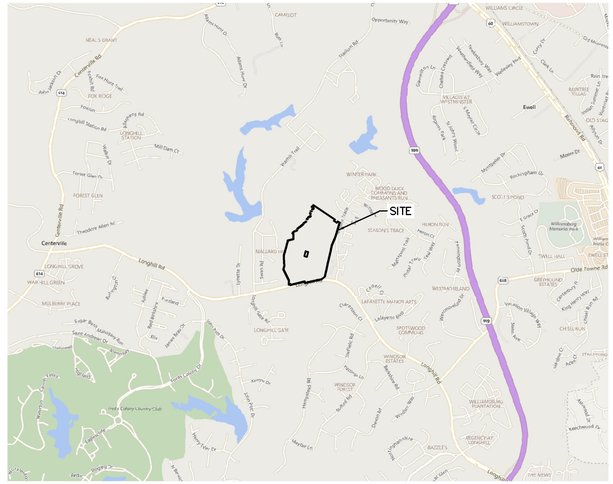
ATTEST:

_____
Paul D. Holt, III
Secretary

Adopted by the Planning Commission of James City County, Virginia, this 2nd day of November, 2016.

SUP15-16LHSAuxGym-res





LOCATION MAP
1" = 2000'

NORTH

SITE INFORMATION

LAFAYETTE HIGH SCHOOL
WILLIAMSBURG–JAMES CITY COUNTY
4460 LONGHILL ROAD
PARCEL # 3230100001

ZONING: PL – PUBLIC LANDS
ACREAGE: 49.76
EXISTING BUILDING: 201,540 S.F.
PROPOSED ADDITION: 10,847 S.F.

SETBACK 35' FROM ANY STREET RIGHT–OF–WAY 50 FEET OR GREATER IF LESS THANK 50 FEET THEN 60' FROM CENTER,INE OF STREET
MIN. WIDTH 100' AT SETBACK LINE

YARD REQUIREMENTS
SIDE 15' FOR MAIN STRUCTURE
5' FOR ACCESSORY BUILDING, ONE STORY
15' FOR ACCESSORY BUILDING OVER ONE STORY
REAR: 35' OR MORE
5' FOR ACCESSORY BUILDING, ONE STORY
15' FOR ACCESSORY BUILDING OVER ONE STORY

HEIGHT LIMIT: STRUCTURES MAY BE ERECTED UP TO TWO STORIES AND SHALL NOT EXCEED 35' IN HEIGHT FROM GRADE.

EXEMPTION: HEIGHT LIMIT MAY BE INCREASED TO 60 FEET, PROVIDED THAT THE REQUIRED FRONT, REAR AND SIDE YARDS SHALL BE INCREASED ONE FOOT FRO EACH FOOT IN HEIGHT.

GRAPHIC SCALE IN FEET
0 40 80 160

NORTH

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2015 KIMLEY–HORN AND ASSOCIATES, INC.
4500 MAIN STREET, SUITE 500, VIRGINIA BEACH, VA 23462
PHONE: 757–213–8600 FAX: 757–213–8601
WWW.KIMLEY–HORN.COM

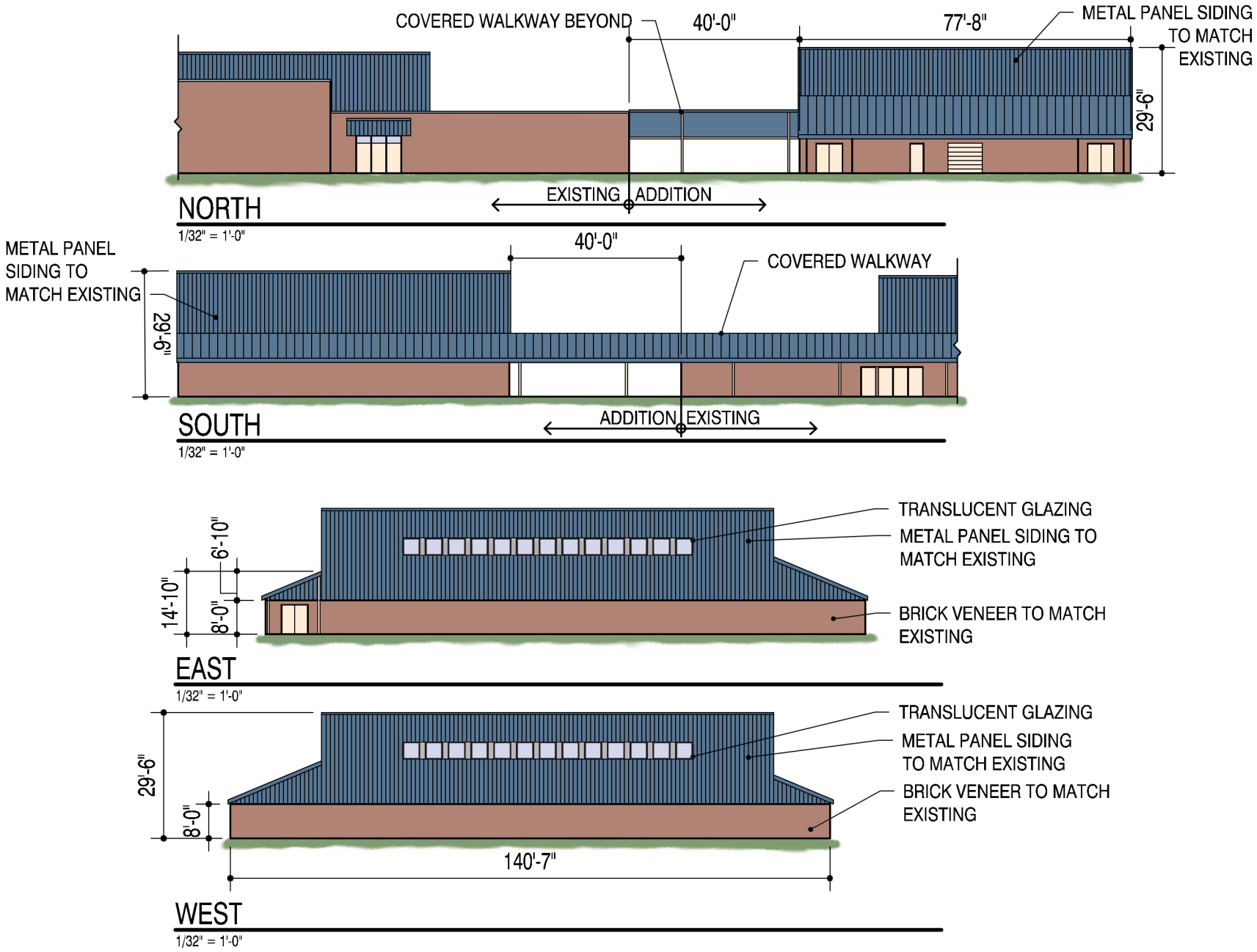
KHA PROJECT 117085000
DATE 9/20/2016
SCALE AS SHOWN
DESIGNED BY EWM
DRAWN BY RCM
CHECKED BY LEY

MASTER PLAN

LAFAYETTE HIGH SCHOOL
FOR
JAMES CITY COUNTY
VIRGINIA

JAMES CITY COUNTY

SHEET NUMBER



LAFAYETTE HIGH SCHOOL - AUXILIARY GYM ADDITION

ELEVATIONS

SCALE: 1/32" = 1'-0"

SEPTEMBER 20, 2016

AGENDA ITEM NO. F.3.

ITEM SUMMARY

DATE: 11/2/2016

TO: The Planning Commission

FROM: Roberta Sulouff, Planner

SUBJECT: ZO-0013-2016. Zoning Ordinance Amendments to Permit Mobile Food Vending Vehicles (Food Trucks) in the B-1, General Business District

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ATTACHMENTS:

	Description	Type
🗋	Staff Report	Staff Report
🗋	Draft Ordinance Language - B-1 Use List (Section 24-390)	Backup Material
🗋	Draft Ordinance Language - Special Regulations (new Section 24-49) as reviewed and recommended for approval at the October 5, 2016, Planning Commission meeting	Backup Material
🗋	Letter of Support from the James City County Economic Development Authority, dated September 14, 2016.	Backup Material
🗋	Restaurant Map	Backup Material

REVIEWERS:

Department	Reviewer	Action	Date
Planning Commission	Holt, Paul	Approved	10/26/2016 - 4:29 PM
Planning Commission	Holt, Paul	Approved	10/26/2016 - 4:29 PM
Publication Management	Babbitt, Katterina	Approved	10/26/2016 - 4:42 PM
Planning Commission	Holt, Paul	Approved	10/26/2016 - 4:43 PM

M E M O R A N D U M

DATE: November 2, 2016

TO: The Planning Commission

FROM: Roberta Sulouff, Planner

SUBJECT: Case No. ZO-0013-2016. Zoning Ordinance Amendments to Permit Mobile Food Vending Vehicles (Food Trucks) in the B-1, General Business District

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History

At its February 9, 2016 work session, the Board of Supervisors asked staff and the Planning Commission to research the issue of food trucks and to begin a discussion of what may be the best fit for this use in James City County. A formal initiating resolution was adopted by the Board at its April 12, 2016 meeting, initiating the consideration of Zoning Ordinance amendments to permit food trucks in the M-1, Limited Business/Industrial, M-2, General Industrial and PUD-C, Planned Unit Development-Commercial Districts. Over the course of the following months, staff received a request from the Board to expand that research to the PL, Public Land District as well. Following meetings to research and discuss draft language in May, August and September 2016, the Policy Committee voted 4-0 at its September 15, 2016 meeting, to recommend approval of draft ordinance language allowing food trucks to operate in the M-1, M-2, PL and PUD-C districts subject to proposed administrative procedures and performance standards. On October 5 the Planning Commission voted 7-0 to recommend approval of these amendments to the Board of Supervisors.

On September 27 the Board of Supervisors adopted an initiating resolution for the consideration of amendments to expand the scope of this work by allowing food trucks to operate in the B-1, General Business District. Over the course of the Policy Committee's initial work on this issue, the committee indicated its desire to draft a set of regulations that could pertain to additional zoning districts should there be a later desire to allow food trucks to operate in districts other than M-1, M-2, PUD-C and PL. In later meetings the committee reaffirmed that desire as it edited draft ordinance language, noting several times that the proposed permitting process and draft regulations could eventually apply to a number of districts.

Staff met with the Policy Committee at its October 13 meeting to receive feedback on research and draft ordinance language. Additionally, staff conducted an online survey targeted to local restaurant owners as well as potential food truck operators. Staff contacted potential food truck operators and owners of existing restaurants within 0.5 miles of any area zoned B-1 via email and the postal service. This correspondence included a link to an online questionnaire, an attached copy of the draft regulations and a map showing existing restaurants and areas zoned B-1. A public input meeting was held on October 17 to discuss the results of that survey and to facilitate additional public comment related to the proposed draft Ordinance language. At this meeting the Policy Committee voted 4-0 to recommend forwarding consideration of these amendments to the Planning Commission.

Draft Ordinance

Draft language is included as Attachment No.1 and accomplishes the following:

- In the B-1, General Business Districts, adds "mobile food vending vehicles" as a permitted use in accordance with the proposed language in Sec. 24-49. Sec. 24-49 is included as Attachment No. 2 and

remains as proposed at the October 5, 2016, Planning Commission meeting. No changes are proposed to this section as a result of permitting food trucks in the B-1 district.

Recommendation

Staff recommends the Planning Commission recommend approval of these amendments of the Zoning Ordinance to the Board of Supervisors.

RS/nb
ZO-13-16FoodTrucks-mem

Attachments:
1. Draft Ordinance Language - B-1 Use List (Section 24-390)
2. Draft Ordinance Language - Special Regulations (new Section 24-49) as reviewed and recommended for approval at the October 5, 2016, Planning Commission meeting
3. Letter of Support from the James City County Economic Development Authority, dated September 14, 2016.
4. Restaurant Map

ORDINANCE NO._____

Chapter 24. Zoning

Article V. Districts

Division 10. General Business District, B-1

Sec. 24-390. - Use list.

Reference section 24-11 for special use permit requirements for certain commercial uses and exemptions.

In the General Business District, B-1, structures to be erected or land to be used, shall be for one or more of the following uses:

Use Category	Use List	Permitted Uses	Specially Permitted Uses
Residential	An apartment or living quarters for a guard, caretaker, proprietor or the person employed on the premises, which is clearly secondary to the commercial use of the property	P	
Commercial	Accessory uses and structures, as defined in section 24-2	P	
	Adult day care centers	P	
	Amphitheaters		SUP
	Antique shops	P	
	Arts and crafts, hobby and handicraft shops	P	
	Auction houses	P	
	Bakeries or fish markets	P	
	Banks and other financial institutions	P	
	Barber and beauty salons	P	
	Business and professional offices	P	

	Campgrounds		SUP
	Catering and meal preparation	P	
	Child day care centers	P	
	Contractor offices (with storage of materials and equipment limited to a fully enclosed building)	P	
	Convenience stores which sell and dispense fuel in accordance with section 24-38		SUP
	Convention centers		SUP
	Country clubs and golf courses, public or private		SUP
	Drug stores	P	
	Dry cleaners and laundries	P	
	Farmer's market	P	
	Feed, seed and farm supply stores	P	
	Firearms sales and service	P	
	Firing and shooting ranges, limited to a fully enclosed building		SUP
	Flea markets		SUP
	Funeral homes	P	
	Gift and souvenir stores	P	
	Grocery stores	P	
	Health and exercise clubs, fitness centers	P	
	Heliports and helistops, as an accessory use		SUP
	Hospitals		SUP

	Hotels and motels	P	
	Indoor centers of amusement including billiard halls, arcades, pool rooms, bowling alleys, dance clubs and bingo halls	P	
	Indoor sport facilities (excluding firing and shooting ranges)	P	
	Indoor theaters	P	
	Janitorial service establishments	P	
	Kennels and animal boarding facilities	P	
	Limousine services (with maintenance limited to a fully enclosed building)	P	
	Lodges, civic clubs, fraternal organizations and service clubs	P	
	Lumber and building supply (with storage limited to a fully enclosed building or screened from view with landscaping and fencing with a maximum height of 12 feet)	P	
	Machinery sales and service (with storage and repair limited to a fully enclosed building)	P	
	Marinas, docks, piers, yacht clubs, boat basins, boat storage and servicing, repair and sale facilities for the same; if fuel is sold, then in accordance with section 24-38	P	
	Marine or waterfront businesses to include the receipt, storage and transshipment of waterborne commerce or seafood receiving, packaging or distribution	P	
	Medical clinics or offices	P	
	Mobile food vending vehicles in accordance with Section 24-49	P	
	Museums	P	
	New and/or rebuilt automotive parts sales (with storage limited to a fully enclosed building)	P	

	Nursing homes		SUP
	Off-street parking as required by article II, division 2 of this chapter	P	
	Office supply stores	P	
	Outdoor centers of amusement, including miniature golf, bumper boats and waterslide parks		SUP
	Outdoor sports facilities, including golf driving ranges, batting cages and skate parks		SUP
	Parking lots, structures or garages	P	
	Pet stores and pet supply sales	P	
	Photography, artist and sculptor stores and studios	P	
	Plumbing and electrical supply and sales (with storage limited to a fully enclosed building)	P	
	Printing, mailing, lithographing, engraving, photocopying, blueprinting and publishing establishments	P	
	Radio and television stations and accessory antenna or towers which are 60 feet or less in height	P	
	Research, development and design facilities or laboratories	P	
	Restaurants, including fast food restaurants, tea rooms, coffee shops, and taverns	P	
	Retail and service stores, including the following stores: alcohol, appliances, books, cabinets, cameras, candy, carpet, coin, department, dressmaking, electronics, florist, furniture, furrier, garden supply, gift, gourmet foods, greeting cards, handicrafts, hardware, home appliance, health and beauty aids, ice cream, jewelry, locksmith, music, office supply, optical goods, paint, pet, photography, picture framing, plant supply, secretarial services, shoes, sporting goods, stamps, tailor, tobacco and pipes, toys, travel agencies, upholstery, variety, wearing apparel, and yard	P	

	goods		
	Retail food stores	P	
	Security service offices	P	
	Small-scale alcohol production	P	
	Taxi service	P	
	Theme parks greater than 10 acres in size		SUP
	Tourist homes	P	
	Vehicle repair and service, including tire, transmission, glass, body and fender, and other automotive product sales, new and/or rebuilt (with major repair limited to a fully enclosed building and storage of parts and vehicles screened from adjacent property by landscaping and fencing)	P	
	Vehicle and trailer sales and services (with major repair limited to a fully enclosed building)	P	
	Vehicle rentals	P	
	Vehicle service stations; if fuel is sold, then in accordance with section 24-38		SUP
	Veterinary hospitals (with all activities limited to a fully enclosed building with the exception of supervised animal exercise while on a leash)	P	
	Wholesale and warehousing (with storage limited to a fully enclosed building)	P	
Civic	Fire stations	P	
	Governmental offices	P	
	Libraries	P	

	Nonemergency medical transport		SUP
	Places of public assembly	P	
	Post offices	P	
	Schools		SUP
Utility	Antennas and towers, self supported, which are 60 feet or less in height	P	
	Antennas or towers in excess of 60 feet in height		SUP
	Electrical generation facilities (public or private), steam generation facilities, and electrical substations with a capacity of 5,000 kilovolt amperes or more and electrical transmission lines capable of transmitting 69 kilovolts or more		SUP
	Railroad facilities including tracks, bridges and stations. Spur lines which are to serve and are accessory to existing or proposed development adjacent to existing railroad rights-of-way and track and safety improvements in existing railroad rights-of-way, are permitted generally and shall not require a special use permit		SUP
	Telephone exchanges and telephone switching stations	P	
	Tower mounted wireless communications facilities in accordance with division 6, Wireless Communications Facilities, in excess of 60 feet in height		SUP
	Transmission pipelines, public or private, including pumping stations and accessory storage, for natural gas, propane gas, petroleum products, chemicals, slurry coal and any other gases, liquids or solids. Extensions for private connections to existing pipelines, which are intended to serve an individual residential or commercial customer and which are accessory to existing or proposed development, are permitted generally and shall not require a special use permit		SUP
	Wireless communications facilities that utilize alternative mounting structures, or are camouflaged, and comply with	P	

	division 6, Wireless Communications Facilities		
	Water facilities, public or private, and sewer facilities (public), including, but not limited to, treatment plants, pumping stations, storage facilities and transmission mains, wells and associated equipment such as pumps to be owned and operated by political jurisdictions. However, the following are permitted generally and shall not require a special use permit:		SUP
	(a) Private connections to existing mains that are intended to serve an individual customer and that are accessory to existing or proposed development, with no additional connections to be made to the line; and		
	(b) Distribution lines and local facilities within a development, including pump stations		
Open	Timbering, in accordance with section 24-43	P	
Industrial Uses	Processing, assembly and manufacture of light industrial products or components, with all storage, processing, assembly and manufacture conducted indoors or under cover, with no dust, noise, odor or other objectionable effect.		SUP
	Waste disposal facilities		SUP

ORDINANCE NO._____

AN ORDINANCE TO AMEND AND REORDAIN CHAPTER 24, ZONING, OF THE CODE OF THE COUNTY OF JAMES CITY, VIRGINIA, BY ADDING ARTICLE II, SPECIAL REGULATIONS; DIVISION I, IN GENERAL; SECTION 24-49, MOBILE FOOD VENDING VEHICLES (FOOD TRUCKS).

BE IT ORDAINED by the Board of Supervisors of the County of James City, Virginia, that Chapter 24, Zoning, is hereby amended and reordained by adding Article II, Special Regulations; Division I, In General; Section 24-49, Mobile food vending vehicles (food trucks).

Chapter 24. Zoning

Article II. Special Regulations

Division I. In General

Sec. 24-49. Mobile food vending vehicles (food trucks)

In order to protect the health, safety and welfare of the citizens of James City County and to ensure that the unique aesthetic characteristics of the area are maintained, the following regulations shall apply to the permitting and operation of mobile food vending vehicles ("food trucks") on public and private property within certain zoning districts of the county. These regulations shall not apply to the operation of food trucks operating in conjunction with a special event, for which a special event permit would be required per chapter 14 of James City County Code, or to food trucks operating in conjunction with a privately catered event not serving the general public.

(a) Administration. The operation of food trucks on appropriately zoned properties shall be permitted by administrative permit. Written application for a mobile food vendor permit shall be made to the zoning administrator or his designee. Such application shall be on forms provided by the county and shall be accompanied by the following:

(1) A copy of a valid health permit from the Virginia Department of Health stating that food truck operation meets all applicable standards. A valid health permit must be maintained for the duration of the permit.

(2) Verification of Fire Department inspection and approval.

(3) Written documentation of the consent of the owner(s) of the property or properties on which the food truck will be operated.

Upon review and determination that the proposed food truck operation complies with the standards set forth in this section, the zoning office shall issue a permit. Any permit that is found in violation or not in compliance with this section may be revoked. The administrative permit shall be issued for a period not to exceed one (1) year, at which time the operator may apply to renew their permit. At any time during the one (1) year permit period, the operator may amend an approved permit application to include additional vending locations by submitting written documentation to the zoning administrator of the consent of the owner(s) of the newly proposed property or properties.

(b) General Operational Requirements. The following standards and conditions shall apply to all food truck operations:

(1) Parking: food trucks shall not park, with the intent of vending, along public rights-of-way, or in designated handicapped parking spaces. Food trucks shall not obstruct pedestrian or bicycle access or passage, impede traffic or parking lot circulation or create safety or visibility problems for vehicles and pedestrians.

(2) Hours of Operation: Food trucks shall operate only during the operational hours of the establishment on the premises.

(3) Permitting: The operator shall display, in a prominent location visible to potential customers, a copy of a valid business license and a copy of a valid health permit.

(4) Setbacks: Food trucks shall be parked at least one hundred (100) feet from any off-site residential dwelling or the main entrance of any existing off-site restaurant establishment.

(5) Signage: Not more than one (a) A-frame signs may be used in conjunction with the food truck operation. Such signs shall not exceed six (6) square feet in area (e.g., each face of the A-frame) and four (4) feet in height, shall be positioned within thirty (30) feet of the food truck and shall not be placed within a public road right-of-way. Signage that is permanently affixed to the food truck shall be permitted; however, flags, banners, flashing signs or other decorative appurtenances, whether attached or detached, shall not be allowed.

(6) Lighting: No lighting shall be displayed on the exterior of the food truck. If a food truck is operating after dark, appropriate lighting may be used to illuminate the menu board and the customer waiting area adjacent to the vehicle. Such lighting shall be provided in accordance with section 24-132 of James City County Code and shall not produce light trespass onto adjacent roadways or properties or into the night sky.

(7) Noise: The volume of any background music played from the food truck shall be limited so as not to be plainly audible beyond the property boundaries of the site where the food truck is located, or at a distance of one hundred (100) feet from the vehicle, whichever is less.

(8) Trash: Operators must provide at least one trash receptacle within ten (10) feet of their food truck.

(9) Liquid Waste: No liquid wastes used in the operation of the food truck or food vending shall be allowed to be discharged from the food truck except into an approved sewerage system as permitted by law.

(10) One (1) station for items such as condiments and paper products and the like, may be set up next to the food truck. Such station may be covered by a roll-out awning extending from the food truck or by a temporary canopy not exceeding ten (10) feet by ten (10) feet in size.

_____
Michael J. Hipple
Chairman, Board of Supervisors

ATTEST:

_____
Bryan J. Hill
Clerk to the Board

	VOTES		
	AYE	NAY	ABSTAIN
MCGLENNON	____	____	____
LARSON	____	____	____
ONIZUK	____	____	____
SADLER	____	____	____
HIPPLE	____	____	____

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of November, 2016.

Ch24-ArtII-Reg-ord

Economic Development Authority
101-D Mounts Bay Road
PO Box 8784
Williamsburg, VA 23187
P: 757-253-6607

yesjamescitycountyva.com

September 14, 2016

Mr. Richard Krapf
Chair, Policy Committee
James City County Planning Commission
PO Box 8784
Williamsburg, VA 23187

Dear Mr. Krapf:

On behalf of the James City County Economic Development Authority (EDA), I would like to commend county staff and the Planning Commission for their work drafting the Mobile Food Vending Vehicle (Food Truck) ordinance. Food trucks are growing in acceptance and popularity across the country, and more recently across Hampton Roads. The EDA is supportive of allowing the operation of food trucks in James City County.

As currently proposed, the ordinance applies to the M-1, M-2, PUD-C and PL zoning districts. This would allow reasonably priced and accessible dining options to the employees of our industrial parks and visitors to our public spaces and County parks.

Furthermore, food trucks provide dining options to visitors of craft beer and distillery operations. As breweries and distilleries are currently permitted by-right in the M-1, M-2 and B-1 zoning districts, the EDA unanimously recommends that the ordinance be expanded to include B-1 districts. This would provide consistency for both food truck operators and brewery and distillery operations, and support the symbiotic relationship between these two business sectors.

The EDA is excited about this new opportunity in James City County, which can encourage food service entrepreneurs to offer diverse and interesting food options and provide a lower-cost start up model for new businesses, who may transition their success into brick and mortar operations. I am pleased to offer the EDA's support for the proposed Mobile Food Vending Vehicle ordinance, and strongly encourage you to consider including the B-1 district into the ordinance.

Sincerely,

Thomas G. Tingle
Chairman, EDA

Cc: JCC Planning Staff
JCC County Administration

James City County

Restaurants in B1 Zoning

N

0 0.5 1 Miles

This drawing is neither a legally recorded map nor a survey and is not intended to be used as such. The information displayed is a compilation of records, information,and data obtained from various sources, and James City County is not responsible for its accuracy or how current it may be.

Code	Business Name	Address	Suite A	Zoning
2	Carrot Tree Kitchen Restaurant	1782 Jamestown Road		B1
13	LaBarra by LaTienda	1325 Jamestown Road		B1
14	Old Chickahominy House	1211 Jamestown Road		B1
15	China Wok	4496 John Tyler Highway		B1
16	Five Forks Caf	4456 John Tyler Highway		B1
17	McDonald's	4521 John Tyler Highway		B1
18	Starbucks Coffee	4511 John Tyler Highway		B1
19	Sushiya	4511 John Tyler Highway		B1
20	Two Sisters Pizzeria	4506 John Tyler Highway		B1
26	Bruster's Real Ice Cream	5289 John Tyler Highway		B1
27	Chopsticks Pho Grill	5251 John Tyler Highway		B1
28	Craft 31	3701 Strawberry Plains Road		B1
29	Papa John's Pizza	5251 John Tyler Highway	Suite A	B1
30	Subway	5251 John Tyler Highway	#10	B1
31	Taco Bell	5239 John Tyler Highway		B1
32	Victoria's	5269 John Tyler Highway		B1
33	Sammy and Nick's Pancake House	7129 Pocahontas Trail		B1
34	The Veranda Dining Room at Fort Magruder	6945 Pocahontas Trail		B1
35	Emily's Donuts and Caf	#123 Merrimac Trail		B1
79	Captain George's Seafood Restaurant	5363 Richmond Road		B1
80	Giuseppes Italian	5525 Olde Towne Road		B1
81	Oceans & Ale	5601-1 Richmond Road		B1
82	Olde Towne Pizza & Deli	5540 Olde Towne Road	#Unit C	B1
83	Papa John's Pizza	5559 Olde Towne Road		B1
84	Subway	5601-9 Richmond Road		B1
85	TGI Friday's	5509 Richmond Road		B1
87	Hot Stacks	6495 Richmond Road		B1
95	China Star	7500-G Richmond Road		B1
96	Daddyo's Pizza and Panini	7500 Richmond Road	Unit H	B1
97	Jimmy's Oven & Grill	7201 Richmond Road		B1
98	Starbucks Coffee	115 Norge Lane		B1
99	Two Sisters Pizzeria II	7887 Richmond Road		B1
101	McDonald's	9193 Barhamsville Road		B1

B1

B1

AGENDA ITEM NO. G.1.

ITEM SUMMARY

DATE: 11/2/2016

TO: The Planning Commission

FROM: Paul D. Holt, III, Planning Director

SUBJECT: ZO-0014-2016, Initiation of Consideration of Amendments to the Sign Ordinance

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Last year, the Supreme Court issued a ruling that will require amendments to the James City County Zoning Ordinance.

In summary, if a sign ordinance organizes and regulates signs based on their message or content, then those portions of the ordinance will be subject to strict scrutiny.

The current James City County Sign Ordinance contains regulations based on message or content; therefore, amendments are required to ensure the regulations are content neutral.

In order to more fully consider needed changes, staff recommends that the Planning Commission adopt the attached resolution to formally initiate consideration of such amendments to the Zoning Ordinance and refer this matter to the Planning Commission's Policy Committee.

ATTACHMENTS:

	Description	Type
🗋	Initiating Resolution	Resolution

REVIEWERS:

Department	Reviewer	Action	Date
Planning Commission	Holt, Paul	Approved	10/27/2016 - 11:46 AM
Planning Commission	Holt, Paul	Approved	10/27/2016 - 11:47 AM
Publication Management	Babbitt, Katterina	Approved	10/27/2016 - 1:30 PM
Planning Commission	Holt, Paul	Approved	10/27/2016 - 1:30 PM

R E S O L U T I O N

INITIATION OF CONSIDERATION OF AMENDMENTS TO THE ZONING ORDINANCE

FOR REVISIONS TO THE SIGN ORDINANCE

WHEREAS, the Virginia Code § 15.2-2286 and County Code § 24-13 permit the Planning Commission of James City County, Virginia (the "Commission") to, by resolution, initiate amendments to the regulations of the Zoning Ordinance that the Commission finds to be prudent; and

WHEREAS, amendments to the Sign Ordinance are necessary to ensure the regulations are content neutral; and

WHEREAS, the Commission is of the opinion that the public necessity, convenience, general welfare or good zoning practice warrant the consideration of amendments to the Zoning Ordinance.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of James City County, Virginia, does hereby, by motion, by resolution, initiate staff review of Article II, Special Regulations, Division 3, Exterior Signs, of Chapter 24, of the Zoning Ordinance of the James City County Code in regards to ensuring the regulations are content neutral. The Planning Commission shall hold at least one public hearing on the consideration of amendments to said Ordinance and shall forward its recommendation to the Board of Supervisors in accordance with the law.

_____
Tim O'Connor
Chair, Planning Commission

ATTEST:

_____
Paul D. Holt, III
Secretary

Adopted by the Planning Commission of James City County, Virginia, this 2nd day of November, 2016.

SignOrd-res

AGENDA ITEM NO. H.1.

ITEM SUMMARY

DATE: 11/2/2016

TO: The Planning Commission

FROM: Paul D. Holt, III, Planning Director

SUBJECT: Planning Director's Report - November 2016

ATTACHMENTS:

	Description	Type
🗋	Memo	Cover Memo
🗋	Spreadsheet listing new applications received	Exhibit

REVIEWERS:

Department	Reviewer	Action	Date
Planning Commission	Holt, Paul	Approved	10/26/2016 - 4:44 PM
Planning Commission	Holt, Paul	Approved	10/26/2016 - 4:45 PM
Publication Management	Babbitt, Katterina	Approved	10/26/2016 - 4:48 PM
Planning Commission	Holt, Paul	Approved	10/26/2016 - 4:48 PM

PLANNING DIRECTOR'S REPORT
November 2016

This report summarizes the status of selected Planning Division activities during the past month.

- **Monthly Case Report:** For a list of all cases received in the last month, please see the attached documents.

- **Board Action Results:**
  - October 11, 2016
    - ZO-0006-2016, Zoning Ordinance Revisions for Electric Vehicle Charging Stations
      Approved (5 – 0)
    - ZO-0007-2016, Zoning Ordinance Revisions to Reduce Parking Minimums
      Deferred indefinitely

New Cases for November 2016						
Case Type	**Case Number**	**Case Title**	**Address**	**Description**	**Planner**	**District**
Conceptual Plan	C-0075-2016	4500 Centerville Road Family Subdivision	4500 CENTERVILLE RD	Family subdivision from parent tract of 2.33 acres.	Jose Ribeiro	02-Powhatan
	C-0076-2016	3802 Ironbound Road Rezoning and Subdivision	3802 IRONBOUND ROAD	Proposal to rezone property for the purpose of creating 3 lots.	Savannah Pietrowski	04-Jamestown
	C-0077-2016	Hogge Family Subdivision, Jolly Pond Road	2675 JOLLY POND ROAD	Family subdivision of 3 lots on 5 acres.	Roberta Sulouff	02-Powhatan
	C-0078-2016	114 Rich Neck Road, Potential Development Options	114 RICH NECK ROAD	Applicant is inquiring about development options for 114 Rich Neck Road.	Alex Baruch	03-Berkeley
	C-0079-2016	Eaglescliffe at Ford's Colony, Eagle's Nest Luxury Apts.	1000 EAGLESCLIFFE	Proposal to replace 60 condominium units with 100 luxury apartments in Eaglescliffe.	Savannah Pietrowski	02-Powhatan
	C-0080-2016	Letchworth BLA	4449 CENTERVILLE RD	Proposed boundary line adjustment between 4441 and 4449 Centerville Road.	Savannah Pietrowski	02-Powhatan
	C-0081-2016	1245 Stewarts Road, Subdivision Options	1245 STEWARTS ROAD	Potential subdivision options for 1245 Stewarts Road.	Alex Baruch	01-Stonehouse
Change of Use	CU-0009-2016	356 McLaws Circle, Suites 1 and 2	356 MCLAWS CIRCLE #2	Change of use from mortgage company to funeral chapel.	Savannah Pietrowski	05-Roberts
Subdivision	S-0030-2016	New Town Sec. 7, Parcel C, Lots 139-141, 146-148, 153-157, 166-183, CA-12, CA-13, CA-14, CA-15	5455 CENTER STREET	Final plat of 29 lots on 1.275 acres.	Roberta Sulouff	04-Jamestown
	S-0031-2016	100 and 110 Skillman Drive BLE	100 SKILLMAN DRIVE	BLE of two Lots on Skillman Drive.	Alex Baruch	01-Stonehouse
	S-0032-2016	Colonial Heritage Ph. 5 Sec. 1 Amend, Isaac Circle Bioretention	499 JOLLY POND ROAD	Amendment to revise existing bioretention along Isaac Circle.	Jose Ribeiro	01-Stonehouse
	S-0033-2016	Village at Candle Station Amend.	7567 RICHMOND ROAD	Approved single family lots #176-184 are to be regraded. Basement units have been converted to slab units. Road grades have raised and utilities have been revised slightly to account for grading changes.	Jose Ribeiro	01-Stonehouse
	S-0034-2016	Village at Candle Station Interim Grading Plan	7567 RICHMOND ROAD	Interim grading plan for previously approved single family lots #1-33.	Jose Ribeiro	01-Stonehouse
Site Plan	SP-0076-2016	Audrey Jones Simpson Park Playground	2885 CHICKAHOMINY RD	Installation of playground equipment in conjunction with KaaBoom and Williamsburg Community Health.	Savannah Pietrowski	01-Stonehouse
	SP-0077-2016	The Candle Factory Mini-Storage	7551 RICHMOND ROAD	Mini-storage facility which includes 7 buildings and associated drive aisles and storm system.	Jose Ribeiro	01-Stonehouse
	SP-0078-2016	Verizon Wireless Collocation, 10039 Old Stage Road	10039 OLD STAGE ROAD	Verizon wireless collocation on existing self support tower.	Jose Ribeiro	01-Stonehouse
	SP-0079-2016	Bryant Contracting Complex	7780 RICHMOND ROAD	Revise landscape requirements for Building 3 in accordance with Section 24-101(c)(2)(b) of the County Code.	Jose Ribeiro	01-Stonehouse
	SP-0080-2016	22, 23, and 24 Mile Course Drainage Improvements	23 MILE COURSE	Repair of drainage ravine. Two drop manholes to be installed with pipe to outfall the water at a lower elevation into a riprap basin to protect from future erosion at the outfall.	Roberta Sulouff	05-Roberts
	SP-0081-2016	Carter's Grove Plantation WRAM Build Improvements	8797 POCAHONTAS TR	Renovation of the existing building formerlly know as the "WRAM building", including installation of a pool and patio, and improvements to stormwater management.	Roberta Sulouff	05-Roberts
	SP-0083-2016	4037 Ironbound Road Parking Improvements	4037 IRONBOUND ROAD	Amendment to change handicapped parking striping and plant species.	Jose Ribeiro	04-Jamestown
	SP-0084-2016	Kingsmill AT&T Tower Upgrade, Frances Thacker Rd.	KINGSMILL ROAD	Install 3 new remote radio units on existing tower.	Savannah Pietrowski	05-Roberts
	SP-0085-2016	Virginia Peninsula Regional Jail Gazebo	9320 MERRIMAC TRAIL	Installation of a gazebo and connecting sidewalk.	Roberta Sulouff	05-Roberts
Special Use Permit	SUP-0015-2016	Lafayette High School Auxiliary Gym	4460 LONGHILL ROAD	Construction of an auxiliary gym and associated firelane and walkway on the campus of the existing Lafayette High School.	Roberta Sulouff	02-Powhatan
	SUP-0016-2016	Pocahontas Trail 7-Eleven Redevelopment and Drive Thru Restaurant	7341 POCAHONTAS TR	Redevelopment of the existing 7-Eleven on a larger parcel resulting from a boundary line adjustment. A drive thru restaurant will occupy the remainder.	Alex Baruch	05-Roberts
Zoning Ordinance Amendment	ZO-0013-2016	Mobile Food Vending Vehicles (Food Trucks) in the B-1, General Business District	N/A	Zoning Ordinance Revision to Allow Mobile Food Vending Vehicles (Food Trucks) in the B-1, General Business District.	Roberta Sulouff	N/A